

**Use of Evaluation to Design Quality Online Learning:
Understanding the Shared Experience**

A Thesis

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by

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Dedications

This dissertation is dedicated to:

My father, Robert Giering, Sr., for showing me that learning can be a life-long passion,

My mother, Margaret Giering, for teaching me the value of hard work and perseverance,

My husband, James McArdle, for providing love, support, and motivation at every step of the way,

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Abstract
Use of Evaluation to Design Quality Online Learning:
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Judith Ann Giering

The growth of online programs has been substantial over the past decade; such growth has required that an equally substantial number of faculty become proficient in the pedagogy of online learning and the best practices in online course design. At the same time, universities are being called on to provide evidence of student learning and satisfaction. The literature review shows that the design of online courses can have an impact on the student learning experience; therefore, knowledge of these practices and the ability to use them when designing an online course is critical for faculty. The literature review also provided an overview of evaluation theory, as well as specific cases of online course evaluations. Design research was used to inform the methodology of this study in which five online courses were investigated. Faculty teaching the courses were asked to complete an evaluation of the design of their online course using the Quality Online Learning Checklist (Hosie, 2005), derived from the constructivist-based Situated Learning Model (Herrington & Oliver, 2000), and a matrix aligning course learning objectives with elements in the online course design. Participants were then interviewed about their experience evaluating the design of their online course. The study found that faculty need more information and training about online learning pedagogies when designing and evaluating courses. In large part, this is due to the fact that responsibility for the design of the online course falls on the faculty, who often have little or no background in design or online pedagogy. Overcoming this challenge, however, becomes difficult given that faculty in this study were averse to a collaborative approach to the

design and evaluation of their online course. Until a culture of collaboration is fostered and rewarded, it may be difficult for faculty to design high quality courses using research-based best practices.

Chapter 1: Introduction

Introduction

The purpose of this study was to gain an understanding of the experience of evaluating online-course design and how this process can impact institutional design and evaluation practices for online courses. Student learning is directly impacted by online-course design; however, the roles and perspectives of each individual involved in the design process, as well as the demands and constraints of different curricula, can create difficulties for large universities seeking a scalable method for evaluating of online-course design.

It is critical that institutions offering online courses evaluate their success in designing engaging learning experiences for their students. Failure to do so can result in dissatisfied students and faculty, students who do not achieve course learning goals, student attrition, and possible loss of academic reputation and/or revenue (Garrison & Anderson, 2003; Krenelka, 2009). This study examined the impact of the evaluation of online-course design; in addition, it explored the perceptions of the various participants and how the evaluation process can contribute to a university-wide, shared understanding of excellence in online-course design.

Background of the Study

Growth of online education. Sixty-three percent of colleges and institutions have reported that “online learning [is] a critical part of their institution’s long-term strategy” (Allen & Seaman, 2010). Universities offer online programs for many reasons: to provide quality education to a broader population of students, to give students a more flexible option for earning a degree, to create an engaging educational experience, to enhance the

reputation of the institution, and/or to increase revenues for the institution (Meyer, 2002; Simonson, Smaldino, Albright, & Zvacek, 2009; Vignare, 2009). Over the past decade, the growth of online programs in higher education has increased exponentially; the number of students taking online courses grew an average of 19.75% from fall 2002 to fall 2009 (Allen & Seaman, 2010), with a 21.1% increase (nearly 1 million new students) from fall 2008 to fall 2009 (Allen & Seaman, 2010); it is estimated that nearly 5.6 million students were enrolled in online programs as of fall 2009 (Allen & Seaman, 2010).

Over 40% of virtual universities spend more than \$1 million annually on the development and delivery of their online degree programs (Poulin & Michelau, 2009), including instructional design, professional development, technology infrastructure, faculty pay, marketing, and student support. Reasons for doing so include increasing the number of students who will have access (financial and geographic) to degree programs, increasing revenue streams, offering programs in a format accessible to disabled students, and enhancing the academic reputation of the organization (Garrison & Anderson, 2003; Mandinach, 2005). Additionally, institutional goals exist for all programs regardless of delivery method, such as engaging students in an intellectually demanding environment, promoting faculty–student interaction, supporting students through their degree pursuit, aiding career preparation, and encouraging graduation from the program (Kuh et al., 2005).

Feedback from online students provides insight into why the growth of online programs has been so significant. Online programs are popular for reasons that include the following: the flexibility and convenience of the asynchronous facet of online learning (Tilson, 2003), the rising number of non-traditional students returning to college

to earn a degree through universities' continuing- or professional-studies programs (Allen & Seaman, 2007), and the appeal of online delivery and its various media formats to students with different learning styles (Harroff & Valentine, 2006). Aware of these factors, colleges and universities have, not surprisingly, been eager to adopt online education.

Such rapid growth has attracted the attention of both accrediting agencies and state and federal governments, all of whom are concerned about the future of online learning and its impact on education in the United States. According to the United States Web-based Education Commission:

The question is no longer if the Internet can be used to transform learning in new and powerful ways. The Commission has found that it can. The Web-Based Education Commission calls upon the new Congress and Administration to embrace an "e-learning" agenda as a centerpiece of our national's federal education policy. (2001)

The United States Department of Education's Office of Postsecondary Education echoes that concern: "The rapid increase in the number of institutions offering distance education courses and programs in the last decade, and the pressure to launch distance education initiatives, can lead an institution or program in directions that are not congruent with its mission" (U.S. Department of Education, 2006).

Leaders of colleges and universities are also concerned about the future of online learning, and particularly with the role that online learning plays in their institutions' success. Over 96% of large (enrollment of 15,000 or higher) institutions provide some type of online course offering (Allen & Seaman, 2006); therefore, the future of online education is critical to the future of higher education. The Middle States Commission on Higher Education acknowledged this challenge in their Interregional Guidelines for

Electronically Offered Degree and Certificate Programs, which state that the delivery of online learning “test[s] conventional assumptions, raising fresh questions as to the essential nature and content of an educational experience and the resources required to support it” (2002). Clearly, online education is not just more of the same. Institutions offering online degree programs need to invest the necessary resources and continue to question and analyze their efforts to provide an engaging learning experience for online students.

Despite the rapid growth of online learning, a number of challenges exist to the successful implementation of online degree programs: faculty resistance (Meyer, 2002), students’ lack of access to necessary support services (Brooks, 2003), problems with technology (Frankola, 2001), and poorly designed courses (Frankola, 2001). Developing an online course requires significant effort on the part of faculty and instructional design staff before the course even begins (Hardy & Bower, 2004). Another stumbling block in the development of online courses is a lack of understanding that the online environment often requires a shift in pedagogical approach (Knowlton, 2000).

Online-course design. Online courses use a computer-based learning environment, often a proprietary learning management system (LMS), to deliver content and conduct course communication. This approach involves two challenges for faculty: learning about the tools and technology that are part of the learning environment and understanding the pedagogical considerations of a well-designed course. “Most faculty come to distance education with classroom experience, and few have experienced distance education either as instructors or students” (U.S. Department of Education, 2006). Because of these challenges, some instructors avoid teaching online (Hardy &

Bower, 2004). Faculty may be concerned that they do not have the time or resources to learn these skills in addition to their already established responsibilities. Training workshops, mentoring, and online resources often help faculty overcome the technological challenges they face (Barker, 2003; Koehler, Mishra, Hershey, & Peruski, 2004). However, it is not easy to “teach” online course-design principles to a faculty member in a short period of time.

A number of institutions offering online programs have responded to the design issue by hiring instructional designers to support faculty in the course-development process. These universities recognize that while faculty are the experts on the topic being taught and should generate the course content, the time required to become sufficiently experienced in instructional design is significant and unlikely to occur in the short period of time that instructors have to prepare for a course. Through collaboration, an instructor and instructional designer can potentially develop a course that is easy to navigate, utilizes technology in a way that supports learning, promotes interaction between and among the instructor and students, includes quality assessments that measure learning, and provides an overall engaging experience for students (Jonassen, Howland, Marra, & Crismond, 2008; Garrison & Anderson, 2003).

A number of models for instructional design, detailed in the literature review of this study, are available and have been used to some degree in online-course design (Brown & Green, 2006). Further, research has begun to produce frameworks aimed specifically at the design of online learning environments (Garrison & Anderson, 2003; Herrington & Oliver, 2000; Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Knowlton, 2000). While adoption of these new frameworks may not yet be widespread,

research has indicated that the use of an instructional-design approach founded on theories of online learning and pedagogy can be quite effective in achieving course learning goals (Herrington & Oliver, 2000).

Evaluation in higher education. The practice of evaluation in higher education has grown significantly over the past few decades, becoming a “major focus of national, state, and institutional efforts intended both to make institutions more accountable for their performance and to help them improve educational quality” (Peterson & Augustine, 2000). Efforts and initiatives on the part of the federal government, including *A Nation at Risk* (1983) and the *Spelling Report* (The Commission of the Future of Higher Education, 2006), have put the spotlight on the importance of evaluation practices. Additionally, reports such as *Evidence of Quality Distance Education Programs Drawn from Interviews with the Accreditation Community* (U.S. General Accounting Office, 2006) and the *Interregional Guidelines for the Evaluation of Distance Programs (Online Learning)* (Middle States Commission on Higher Education, 2011) have provided a more in-depth focus on the evaluation of online learning.

With the rapid increase in online degree programs in a relatively short period of time, many colleges and universities have focused primarily on program development and student enrollment for online programs. It is not enough, however, to demonstrate success in these areas. Institutions must evaluate the “effectiveness of [their] online learning offerings, including the extent to which the online learning goals are achieved, and [use] the results of [their] evaluations to enhance the attainment of the goals” (Middle States Commission on Higher Education, 2011). The growth of online programs has occurred because institutions have embraced new technologies, new delivery methods,

and new paradigms for instruction; now these institutions must embrace the evaluation of these programs so that the programs can flourish in ways that benefit students and the institution alike. Colleges and universities must find and implement methods of collecting evaluation data, but more importantly, they must determine how best to use the data in a way that benefits student success.

Problem Statement

More and more frequently, faculty members are being asked to teach online. They come to this experience with a wide variety of experience in online learning—from those instructors who have a wealth of experience to those who are not only inexperienced but also reluctant (Morris & Finnegan, 2009; Vignare, 2009). The demands of online teaching are high, particularly in regard to utilizing the available technology in order to design a course that engages students (Lee & Busch, 2005; Hardy & Bower, 2004). A particular challenge faced by online instructors is designing a high-quality online course that is student centered and uses pedagogical approaches that consider both learners and course objectives (Barker, 2003).

Universities have met this challenge to varying degrees through a number of efforts. Instructional designers can provide “the evidence-based methodologies for implementing quality online programs based on solid pedagogical principles and collaboration” (Vasser, 2011), and many universities suggest or require that faculty use these designers’ assistance in developing online courses (Morris & Finnegan, 2009). Professional development for online instructors has become a critical requirement for providing a quality learning experience for students (Broughton, 2009); universities are addressing this need in a variety of ways ranging from “how to use basic technology tools

to effective pedagogical techniques” (Vignare, 2009). These programs range from multi-pronged, sustained courses to lunchtime workshops (Roman, Kelsey, and Lin, 2011).

At the same time, universities are being required to demonstrate the effectiveness of student learning at their institutions. Traditional end-of-course evaluations may fall short in this effort as a result of low response rates (Morris & Finnegan, 2009), students’ attitudes towards surveys (Doherty, 2006), or poor survey design (Doherty, 2006). The evaluation of online courses, and of those courses’ design in particular, can be difficult to craft and implement (Matuga, 2006); stakeholders therefore must explore various ways to gain the information they need. Specifically, they must ensure that assessment of online courses “align[s] with other pedagogical variables to support effective teaching and learning” (Matuga, 2006).

Just as online-course design can be a positive experience when it is a team-based effort (Xu & Morris, 2007), the evaluation of online-course design can benefit from a collaborative approach. The evaluation effort must also be scalable, particularly in an institution in which online courses are offered regularly and in large numbers. It is clear that a need exists for a formative evaluation process to be implemented in which qualitative and quantitative data are used on an ongoing basis to improve course design. The measures should include course learning goals as the basis for evaluation; in addition, data should be elicited from course subject-matter experts, instructional designers, students, and all course instructors, as each will bring a unique perspective to the evaluation. It is through such an effort that universities will be able to confidently acknowledge the quality of the learning experience in their online courses.

Purpose of Study/Research Questions

In its 2007–2012 strategic plan, Drexel University identified “enriching the educational experience” as a primary strategic objective (Strategic Plan). Specifically, the strategic plan indicated that the university “must not only compete on the quality of the content but on the quality of the learning process—including design and delivery.” Given this mandate from the university, it is imperative that the school’s faculty and instructional designers explore ways of improving online-course design. The following research questions were therefore conceived for this study:

1. Which components and activities of the course design evaluation are deemed valuable and why?
2. What factors support or challenge the evaluation process for online-course design?
3. What is the perception of the shared experience of evaluating the design of an online course?

Significance of the Study

The body of literature related to program evaluation is extensive. However, research on the evaluation of online degree programs, and specifically evaluation supporting the design of online courses, is still in its infancy. Much remains to be learned about how evaluation can inform the online-course design and improvement processes.

This study aimed to contribute to the development of theory related to online-course evaluation and the methods of improving online-course design, providing a model for evaluating online-course design that is grounded in theory, assessment regulations, and best practices. The researcher believed that exploring the potential impact evaluation

may have on course design would yield a deeper understanding of how instructional design for online courses can help promote the programmatic and learning goals of online programs. Student learning and success are accepted and valuable goals of higher education. This study sought to determine how both goals can be better achieved for online students.

Methodology

This investigation was a qualitative study investigating how the evaluation of course design can be implemented, monitored, and/or improved using the design-research approach. Design research is concerned with what can be learned from the *process* of implementing a potential solution. At the same time, design research uses rigorous approaches to research that enable researchers to generalize findings to other cases. This study used the case-study method to investigate the evaluation of the course design of five online courses from five different colleges or schools at one university.

In this study, faculty completed an evaluation of their online course design. Artifacts resulting from the evaluation were analyzed, including the course description and learning objectives, a completed Quality Checklist for Online Learning, a completed matrix aligning course elements with learning goals, the results of faculty surveys, and faculty and instructional designers' answers to reflective questions. Finally, interviews and/or focus groups were conducted for all participants in the study, during which feedback and perceptions about the evaluation were elicited.

Definition of Terms

Evaluation – A process of “collecting and analyzing data in order to determine whether and to what degree objectives have been or are being achieved [or] in order to make a decision” (Boulmetis & Dutwin, 2005).

Formative evaluation – “An examination of a program or project in progress” (Boulmetis & Dutwin, 2005).

Design research – An approach to research “characterized by iterative design and formative research in complex real world settings” (Edelson, 2002).

Instructional design – The process of identifying a learning problem or goal, determining the instructional approaches and media that will be used to deliver the instruction, obtaining or developing the resources needed to implement the instruction, delivering the instruction, and evaluating the instruction (Brown & Green, 2006).

Interactive evaluation – An evaluation framework based on the premise that evaluation efforts are “internal, influenced by those who are ‘close to the action,’ and . . . encourage utilization of findings” (Owen, 2006).

Learning management system – A proprietary computer-mediated learning environment, used by organizations to deliver online learning, which bundles communication technology, social media, and multimedia technology, and provides a framework within which to deliver course content.

Online course – In the context of this research study, a for-credit course that is part of a degree program and delivered online via Blackboard or Bb Vista.

Summative evaluation – “Evaluation conducted at the end of a program or project” (Boulmetis & Dutwin, 2005).

Delimitations of the Study

This scope of this study was limited to five cases in one university. Additionally, this study represented the first phase of a design-research study. Further research over a significant period of time would provide additional insight into the effectiveness of the evaluation of online-course design.

Limitations of the Study

Because this research was a case study and the sample was purposively selected, findings may not be generalizable to all online courses or to all disciplines. Universities that do not have large online programs, instructional designers on staff, or the use of learning management systems may not obtain similar findings in a like study.

Chapter 2: Review of the Literature

In order to provide a theoretical foundation for this study, research on the following topics occurred: instructional design for online courses, evaluation theory and models of evaluation, and evaluation of online programs. In this chapter, an analysis of the theory of instructional design for online courses provides insight into the importance of quality course design and the pedagogy supporting it. The research on evaluation theory and models of evaluation defines evaluation terminology, presents the underpinnings of evaluation theory, and explores various approaches to evaluation. An overview of the current practices in online-program evaluation provides a context for understanding what, at the time of the study, was occurring—and, more importantly, was not occurring—at institutions of higher education in terms of online-program evaluation. Finally, the chapter provides a synthesis of these three areas.

Instructional Design for Online Courses

Instructional design defined. With a basis in fields such as educational psychology, cognitive psychology, and communications (Brown & Green, 2006), instructional design is the process of identifying a learning problem or goal, determining the instructional approaches and media that will be used to deliver the instruction, obtaining or developing the resources needed to implement the instruction, delivering the instruction, and evaluating the instruction (Brown & Green, 2006; Gustafson & Branch, 2007).

Alternatively, instructional design can be seen as a process, a discipline, a science, and a reality:

Process - Instructional design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes the development of instructional materials and activities, and the tryout and evaluation of all instruction and learner activities.

Discipline - Instructional design is that branch of knowledge concerned with research and theory about instructional strategies and the process for developing and implementing those strategies.

Science - Instructional design is the science of creating detailed specifications and the development, implementation, evaluation and maintenance of situations that facilitate the learning of both large and small units of subject matter at all levels of complexity.

Reality - Instructional design can start at any point in the design process. Often a glimmer of an idea is developed to give the core of an instruction situation. By the time the entire process is done, the designer looks back, and she or he checks to see that all parts of the “science” have been taken into account. Then the entire process is written up as if it occurred in a systematic fashion.

(University of Michigan, 1996)

While the definitions of instructional design as a discipline, a science, and a reality all informed this research, the definition of instructional design as a process was the most relevant. Gustafson and Branch (2007) described the process of instructional design as one that is learner-centered, goal-oriented, and focused on meaningful performance; assumes outcomes can be measured in a reliable and valid way; is empirical and self-correcting; and requires a team effort. Although instructional design today can be a very complex, systems-based process, utilizing diverse types of media and computer-based technology, the field was not always that way; growth and change in instructional design has occurred rapidly over the last fifty-plus years.

Instructional design has a two-pronged background: the growth of instructional media over the 20th century and the psychological theories of learning that have shaped educational practice (Reiser, 2007). In the first half of the 20th century, instructional media was primarily limited to photos, films, slides, and radio; after World War II, that list expanded to include television and, soon afterward, computer-based technologies (Reiser, 2007). Paralleling this evolution was the exploration of how various theories of learning could improve training materials used both in the military during World War II and in industry in the decades after the war. Some of these theories include behaviorism and Skinner's programmed instruction movement, Bloom's taxonomy, and Gagne's conditions of learning (Reiser, 2007). In the 1960s, models of instructional design appeared based on the work of individuals like Gagne and Silvern; more models were introduced in the 1970s based on the systems approach to instructional design (Reiser, 2007).

A few of the more well-known instructional design models that have been developed include Dick and Carey's systems approach; the Kemp, Morrison, and Ross plan; and the commonly used ADDIE (analyze, design, develop, implement and evaluate) model (Brown & Green, 2006). The use of a model during the instructional design process provides "guidelines and procedures that can be applied to a wide variety of specific situations [and] can help significantly reduce training and education costs (Nixon & Lee, 2001, in Brown & Green, 2006). Table 1 shows the key features of some popular models.

Table 1: Key features of evaluation models

Model	Key Features
Dick & Carey's Systems Approach	<ul style="list-style-type: none"> • Looks at all factors including learner and environment • Encourages summative evaluation to continuously improve instruction
Kemp, Morrison & Ross Plan	<ul style="list-style-type: none"> • Nine elements of instructional design plan • Not a linear approach
ADDIE	<ul style="list-style-type: none"> • Acronym for the critical phases of instructional design (analyze, design, develop, implement, and evaluate) • Basis for many variations

(Brown & Green, 2006)

The field of instructional design was further influenced in the 1980s by an interest in cognitive psychology and primarily saw growth in business and the military, as opposed to education (Reiser, 2007). This trend was accompanied by an increasing interest in how the advent of the microcomputer could impact the delivery of instructional training. As developments in computing, including the widespread adoption of the internet, occurred in the 1990s, constructivism joined cognitive psychology as a major learning theory to be used in instructional design (Reiser, 2007). Combined with computer-based instruction, constructivism appeared to a growing number of theorists to answer the challenge of how to effectively promote meaningful learning (Duffy & Kirkley, 2004; Irlbeck, Kays, Jones, and Sims, 2006; Jonassen, 1994, Jonassen, Davidson, Collins, Campbell, & Haag, 1995).

Constructivism as a framework for the design of online courses. The challenges faced by instructional designers in the late 1980s and 1990s were several: how to embrace new, computer-based technologies, how to make instructional design more relevant for the educational setting in general and distance education in particular, and

how to ensure that the learning process was meaningful and not just behavior-changing (Duffy & Kirkley, 2004; Irlbeck et al., 2006; Jonassen et al., 1995; Reiser & Dempsey, 2007). Traditional models were not meeting the unique needs of the online learning environment. In particular, learning management systems and online tools need to be considered within a pedagogical framework. In response, many leaders in the field began to use constructivism to design computer-mediated learning environments as a potential answer to the above concerns.

Since the field's inception, instructional designers have incorporated a number of learning concepts and theories into their practice. Constructivism presented more of a challenge than other learning theories. As Jonassen (1994) pointed out, "The term 'constructivist instruction' is, from a theoretical perspective . . . an oxymoron." Instructional sequences leading an individual down a pre-scripted path toward a previously determined outcome—the basis of traditional instructional design models—is conceptually opposed to constructivism, which encourages individuals to learn through self-led, meaningful discovery that leads to potentially different, yet valuable outcomes. Although the concepts of learning promoted by constructivism are easily understood, they are not easily placed into a design methodology (Jonassen, 1994).

That said, many research articles and books discuss instructional design for online courses. Jonassen (1994) asked, "How do we adapt our models of design to foster constructivist learning?" He attempted to answer the questions by presenting seven guidelines for instructional design using constructivism:

- Avoid oversimplification of instruction by representing the natural complexity of the real world
- Focus on knowledge construction, not reproduction

- Present authentic tasks
- Provide real-world, case-based learning environments
- Foster reflective practice
- Enable context- and content-dependent knowledge construction
- Support collaborative construction of knowledge through social negotiation (Jonassen, 1994)

The use of such guidelines is the key to creating an engaging learning experience.

“Students engaged by the materials are actively processing the content, which is essential for learning” (Morrison & Guenther, 2000). The concept of engaging students in learning has led to recommendations on the use of constructivism in online courses.

Several theorists have presented their concepts of how constructivism can be used and implemented in online courses. “Constructivist principles provide a set of guiding principles to help designers and teachers create learner-centered, collaborative environments that support reflective and experiential processes” (Jonassen et al., 1995). Following is a discussion of constructivism in online courses focusing on the aspects of constructivism used in instruction (Jonassen et al., 1995); the features of instructional activities (Jonassen et al., 1995); the roles of instructor and students (Knowlton, 2000); and types of assignments (Marra & Jonassen, 2001).

Jonassen et al. (1995) discussed the four aspects of constructivism that bear on instruction. *Context* adds a real-world aspect to learning and can be physical, organizational, cultural, social, or political in form. *Construction* is a process comprised of the “active process of articulation and reflection within a context” (Jonassen et al., 1995). *Collaboration* can be seen throughout many phases of the learning process. An important component of distance learning, collaboration helps students develop and test new concepts within its context. The final aspect is *conversation*, which involves

“reflecting on what is known, what needs to be known, the viability of plans and their potential effectiveness” (Jonassen et al., 1995).

Once aware of the aspects of constructivism that are effective in online courses, instructors and designers can begin to evaluate specific learning activities. Each activity should:

- “Be centered on engaging and worthy problems or questions of importance in which students must construct knowledge for effective performance.”
- “Include tasks that are either replicas of or analogous to the kinds of real-world problems faced by citizens, consumers, or professionals in the field.”
- “Provide access for the student to resources commonly available to those engaged in analogous real-life problems or activities.”
- “Present problems requiring a repertoire of knowledge, judgment in determining the appropriateness of knowledge, and skills in prioritizing problem classification and solution phases.”

(Jonassen et al., 1995)

Given specific learning activities, instructors and students must discover their new roles in a constructivist online course. Students have much more responsibility for their own learning in an online course than in a traditional educational setting; they become active participants in the learning process and “should actively construct their own meaning by engaging in tasks that are indicative of real-world activities” (Knowlton, 2000). In this way, the “learner [is] one who interacts with the environment and acquires knowledge, skills and competence from it, rather than . . . one who is controlled by instruction” (Jonassen et al., 1995).

Perkins (1991) asserted that learners are of three types: active, social, and creative. Each learner type is described in Table 2.

Table 2: Types of learners

Active Learner	Knowledge and understanding as actively acquired
Social Learner	Knowledge and understanding as socially constructed
Creative Learner	Knowledge and understanding as created or re-created

(Perkins, 1991)

On the other hand, in online learning the teacher's role changes from one of content delivery to one of coach, counselor, and mentor (Knowlton, 2000). The key to success with these role changes is the presence of a collaborative dialog between instructors and students. In practice, such a dialog requires de-emphasis of lecturing and "talking at" students and encouragement of students' active engagement in establishing and pursuing their own learning objectives (Nodding, 1998). Another role of the instructor is to provide assignments that are constructivist in nature. "Semantic networking, concept mapping, multi-media representations, prototyping, learning communities" (Marra & Jonassen, 2001) are just some of the effective types of assignments that can be offered in a constructivist online course.

Research has suggested that, by following these guidelines, a designer can support a shift "from creating prescriptive learning situations to developing environments that engage learners and require them to construct the knowledge that is most meaningful to them" (Jonassen et al., 1995). With this foundation, several researchers have proposed their own models of instructional design for online courses.

Models of instructional design for online courses. "Designing for the online environment involves complex problem solving, meeting the user's needs, [and]

incorporating value systems and problem contexts, and therefore, needs a process that makes instructional design more effective [and] efficient and better reflects the complexity of the overall process” (Irlbeck et al., 2006). Instructional design for online courses offers both expanded opportunities and additional challenges in comparison to traditional instructional design. The media and other features used in online courses enable designers to create environments that mimic real-life situations that students would not otherwise be able to experience, use interactivity in many learning exercises, and connect learners to resources without geographical or temporal boundaries. On the other hand, designing online courses requires significant time and resources, is an ill-defined process that may seem onerous to some designers, and can present difficulty in determining how best to apply constructivist principles. The following models use constructivist-based learning principles to inform the instructional design process for online learning.

In a 1994 article, Jonassen explored the questions of how “designers determine and insure a common set of outcomes for learning” if individuals are responsible for the construction of their own knowledge, and how designers “adapt . . . models of design to foster constructivist learning.” While he did not actually propose a model of instructional design, Jonassen offered guidelines for design based on 3 Cs—context, collaboration and construction—with the following facets (Table 3).

Table 3: Jonassen’s guidelines for design of online learning

Context	<ul style="list-style-type: none"> • Supported by case-based problems • Requires an understanding of its own thinking processes and problem-solving methods • Modeled for learners by skilled performers
Collaboration	<ul style="list-style-type: none"> • Engages and facilitates social negotiation • Provides an intellectual toolkit to facilitate an internal negotiation which is necessary for building mental models.
Construction	<ul style="list-style-type: none"> • Based on internal negotiation (articulating mental models – accommodation by Piaget) • Based on social negotiation (sharing a reality with others) • Facilitated by exploration of real-world environments and invention of new environments • Resulting in mental models

(Jonassen, 1994)

Recognizing the fact that without the aid of some type of structure in the design process, many teachers and designers will be dissuaded from designing for online courses, Oliver and Herrington (2003) discussed three elements of the design process that “promote knowledge construction”:

- Design and specification of tasks *to engage and direct the learner* in the process of knowledge acquisition and development of understanding;
- Design and specification of *supports for the online learner* to scaffold the learning and to provide meaningful forms of feedback;
- Design and specification of *the learning resources* needed by the learner to successfully complete the set tasks and to facilitate the scaffolding and guidance.

(Oliver & Herrington, 2003)

One of the most effective ways to achieve these specifications is the situated learning model for designing multimedia learning environments (Herrington & Oliver, 2000). The model consists of the following elements: “provid[ing] *authentic contexts* that reflect the way the knowledge will be used in real life, provid[ing] *authentic*

activities, provid[ing] access to *expert performances* and the modeling of process, provid[ing] *multiple roles and perspectives*, support[ing] *collaborative construction of knowledge*, promot[ing] *reflection* to enable abstractions to be formed, promot[ing] *articulation* to enable tacit knowledge to be made explicit, provid[ing] *coaching and scaffolding* by the teacher at critical times, [and] provid[ing] for *authentic assessment* of learning within the tasks” (Herrington & Oliver, 2000). In a study that evaluated students’ perceptions of their learning experiences using a multimedia package based on a situated-learning framework, Herrington & Oliver (2000) determined that the use of the situated-learning framework “provided effective instructional design guidelines for the design of an environment for the acquisition of advanced knowledge.” Given these findings, Herrington & Oliver (2000) averred that the situated learning model can be an “effective substitute for the traditional instructional design model.”

Noting that “the foundational models of instructional design that typically inform the design, development, and delivery of online environments do not always support the epistemology and pedagogy that embodies the online environment,” Irlbeck et al. (2006) proposed the three-phase model. This model is a team-based, bottom-up approach in which decisions about media and content are made by the student from options created by instructional designers, teachers, and media producers. Phase one, preparing functional components, includes identifying content, media used, and learning strategies; phase two is an iterative process of evaluation, elaboration, and enhancement; and phase three is the maintenance of the system (Irlbeck et al., 2006). One key to the model is the interaction of three teams during and after the design process: the development support team, the faculty team, and the user team. All three teams are required for a successful design

process (Irlbeck et al., 2006). While the authors stated that they used the three-phase model, no data were presented as to its effectiveness or usability.

Jonassen & Rohrer-Murphy (1999) proposed activity theory as a theoretical “framework for designing constructivist learning environments.” Based on the presumption that “conscious learning emerges from activity, not as a precursor to it” (Jonassen & Rohrer-Murphy, 1999), activity theory forms the basis of designing activity systems, a complex interplay between the learner, the community, and the learning goal that is supported by tools, rules, and a division of labor (Jonassen & Rohrer-Murphy, 1999). In order to incorporate activity theory into an online course, the following steps should be taken:

1. Clarify purpose of activity system
2. Analyze the activity system
3. Analyze the activity structure
4. Analyze tools and mediators
5. Analyze the content
6. Analyze activity systems domains

(Jonassen & Rohrer-Murphy, 1999)

Each step above has a series of sub-steps that are a part of the design process of the online course. In this way, activity theory “provides an appropriate framework for analyzing needs, tasks, and outcomes for designing” online courses using constructivism as the foundation (Jonassen & Rohrer-Murphy, 1999).

E-learning simulation games, a constructivist method of instruction, are engaging to students as well as effective forums for learning (Quinn, 2005). Quinn’s model for e-learning simulation games is a hybrid of an ADDIE-like design process merged with the principles of game engagement in order to create meaningful learning (Quinn, 2005). The stages of his model, which are iterative in nature, are shown in Table 4.

Table 4: Stages in Quinn's model for e-learning

Analysis	<ul style="list-style-type: none"> • Determine target performance • Determine learner characteristics • Determine learner interests • Establish metrics
Specification	<ul style="list-style-type: none"> • Situate the task in a model world • Elaborate the details • Incorporate underlying pedagogical support • Map learning to interface • Build the model
Implementation	<ul style="list-style-type: none"> • Prototype
Evaluation	<ul style="list-style-type: none"> • Test for usability • Test for educational effectiveness • Test for engagement

(Quinn, 2005)

The model yields the following elements: objective, introduction, concept, examples, practice, and summary (Quinn, 2005). Case studies presented by Quinn (2005) indicated that while building effective e-learning simulation games is more challenging than traditional instruction, the payoff of an engaging and educational module is worth the investment.

Problem-based learning was the approach used for the design and implementation of a learning module developed for a Master of Education program. Problem-based learning, an offshoot of the constructivist approach, uses “real” problems in “real” contexts to create active learners out of the students (Pearson, 2004). “Problem-based learning (PBL) presents a coherent and practical approach to learning which incorporates ‘active’ rather than ‘passive’ approaches to the development of critical thinking skills, experiential and social learning in the form of collaborative inquiry based on engaging with authentic problems, and more dynamic interactions between teachers and learners

based on respect for students' prior learning and experience" (Pearson, 2004). The following are the steps of the model:

- Clarify terms in the problem
- Define the problem to seek initial understanding
- Analyze the problem—give possible explanations to reveal prior knowledge
- Summarize the major points of problem analysis
- Formulate learning objectives for the problem in the form of issues or questions
- Independent research based on step five
- Group discussion
- Group presentations

(Pearson, 2004)

A survey was conducted to evaluate the effectiveness of the problem-based-learning approach, and specifically "the extent to which the adoption of PBL as 'curriculum' and 'process' had been implemented" (Pearson, 2004). Pearson's (2004) findings indicated that "PBL can be a viable strategy to investigate the challenges associated with the use of [internet communications technologies] in schools in both face-to-face and online learning situations."

In their investigation into students' reactions to using a learning-management system, Osman (2005) noted the following implications for the design of online learning environments (OLLE): "The theoretical foundations for OLLE should be based on constructivist, situated-cognition, and shared-cognition approaches to learning; OLLE requires certain infrastructures that are capable of accommodating both synchronous and asynchronous learning activities, and are able to provide students with both 'static' and 'dynamic' learning resources; designing pedagogically sound OLLE requires certain types of technical features, and easy to use communication tools, as well as course design, development, implementation, monitoring and evaluation tools; efficient transfer

and transformation of learning requires unlimited access to OLLE and associated technical support services; the instructional design principles for OLLE should accommodate the provision of authoring environments that can facilitate the development of web-based instructional materials and learning activities without demanding high levels of technical expertise on the part of the instructors and/or students; and learning materials designed for OLLE are often very resource intensive to develop” (Osman, 2005).

Evaluation Theory and Models of Evaluation

Evaluation theory. The practice of evaluation cannot effectively be considered until the theoretical foundation is discussed; therefore, before reviewing the various models that are used for the evaluation of online programs, this review will define the concept of evaluation and explore related theoretical issues. Simonson et al. (2009) defined evaluation as “the systematic investigation of the worth of an object.” More practically, Boulmetis and Dutwin (2005) described a process of “collecting and analyzing data in order to determine whether and to what degree objectives have been or are being achieved in order to make a decision.” Scriven (1991, in Williams, 2006) gave this process more detail, indicating that evaluation “involves some identification of relevant standards or merit, worth, or value; some investigation of the performance of evaluands on these standards; and some integration or synthesis of the results to achieve an overall evaluation.” The conclusions of such an evaluation “encompass both an empirical aspect (something that is the case) and a normative aspect (judgment about the value of something)” (Fournier, 2005, in Williams et al., 2006). Both aspects are valuable to the organizations that conduct evaluations.

The purposes for undertaking an evaluation are extensive, including “validation, accountability, monitoring . . . improvement and development” (Smith & Brandon, 2008), presenting a case for funding, aiding an organization in strategic planning and decision-making, and research (Boulmetis & Dutwin, 2005). Owen (2006) formalized the reasons for which an evaluation may be conducted, defining the purpose of evaluation based on the following forms: *proactive evaluation*, which occurs prior to program implementation to “assist program planners to make decisions about what type of program is needed” (Owen, 2006); *clarificative evaluation*, which focuses efforts on developing the justification of a program and its objectives; *interactive evaluation*, which assesses ongoing programs and their effectiveness at meeting program goals and can be “involved in facilitating change that is consistent with the evaluation findings” (Owen, 2006); *monitoring evaluation*, which provides ongoing data about an established program; and *impact evaluation*, which is used to “assess the effects of a settled program” (Owen, 2006). Use of one of these forms in an evaluation provides a “conceptual map by which the evaluator and client can make a decision about how to proceed” (Owen, 2006).

Keith and Fortune (1992, in Simonson et al., 2009) presented another format for providing insight into why organizations evaluate. They discussed the reasons for evaluating in terms of the AEIOU (accountability, effectiveness, impact, organizational change and unexpected outcomes) approach to evaluation. Simonson et al. (2009) described each of these aspects as follows:

- Accountability – Did the project planners do what they said they were going to do?
- Effectiveness – How well done was the project?

- Impact – Did the program make a difference?
- Organizational change – What structures, policies, or events in the organization helped or hindered the program in accomplishing its goals?
- Unanticipated consequences – What unexpected changes or consequences of importance happened as a result of the program?

Each of the facets in AEIOU can stand independently as the purpose for an evaluation or can be used in conjunction with some or all of the other facets to create an in-depth look at a program or situation.

Regardless of the purpose for the evaluation, the evaluative process can be described as utilizing both formative and summative strategies of evaluation. Boulmetis and Dutwin (2005) defined formative evaluation as “an examination of a program or project in progress” and summative evaluation as “an evaluation conducted at the end of a program or project.” Most evaluation models use both approaches to some degree (Schankman, 2005), but the goal of the evaluation ultimately drives the focus toward one or the other approach. Formative evaluation focuses “more on process and feedback to determine the extent to which the program is operating as intended” (Rovai, 2003) and is often used to assess whether a program is functioning in accordance with program goals or for program improvement. Conversely, summative evaluation emphasizes “determining the results or outcomes of the program” (Rovai, 2003) and is frequently used for funded projects or other instances for which accountability measures are required.

Whether pursuing a formative or summative evaluation, a methodology must be selected. The three evaluation methodologies include the *qualitative*, *quantitative*, and *mixed-methods* approaches. The results of an evaluation should be both meaningful to

stakeholders (Mandinach, 2005) and capable of providing the data necessary for decision making or to “improve or change a program” (Boulmetis & Dutwin, 2005). Quantitative methods of evaluation are context-free and seek to determine a relationship between variables such as cause and effect. Surveys, tests, questionnaires, and analysis of numerical data are all forms of data collection for quantitative evaluations (Boulmetis & Dutwin, 2005). Qualitative methods of evaluation “tend to be less precise in terms of the measurement of outcomes, [but] they can provide rich information on the details of the process” (Mandinach, 2005). Qualitative evaluation is often field-focused, contextual, interpretive, and holistic in nature; pays attention to details that are part of an experience; and seeks to provide meaning to the subject being evaluated (Eisner, 1998). Data-collection techniques used for qualitative evaluation include observation by the evaluator, interviews, case studies, focus groups, and artifact analysis (Boulmetis & Dutwin, 2005). A mixed-methods approach to evaluation uses both qualitative and quantitative data collection methods and seeks to triangulate the data in a manner that provides a comprehensive understanding of the program.

Models of evaluation. A number of models of evaluation have been developed over the past 50 years; those created or adapted for online learning appear in this review. One of the original models, Kirkpatrick’s four levels of evaluation, has been adapted by Horton (2001) as a model for e-learning evaluation. Kirkpatrick first developed his model in 1959 in a series of articles he wrote for the American Society for Training and Development (ASTD) (Kirkpatrick & Kirkpatrick, 2006). Each of the four levels (Table 5) of evaluation provides an increasingly complex look at the outcomes of a training program (Kirkpatrick & Kirkpatrick, 2006).

Kirkpatrick's model has been used extensively in corporations over the past five decades and remains a mainstay on the ASTD web site (ASTD web site). In his adaptation of Kirkpatrick's four levels, Horton pointed out that "since we are measuring results rather than mechanisms, we can use this framework to evaluate e-learning as we do to evaluate other forms of learning" (Horton, 2001). In other words, it is the outcomes

Table 5: The four levels of Kirkpatrick's evaluation model

Level	Description
1 – Response	<i>Reveals learners' immediate reaction to training:</i> Did learners like the training? Did they complete the training?
2 – Learning	<i>Determines how much learners actually learn:</i> What skills and knowledge did they acquire?
3 – Performance	<i>Describes to what degree learners apply knowledge to their jobs:</i> How much is job performance improved? What can learners apply to their jobs?
4 – Results	<i>Examines whether the training was a good business investment:</i> How well did the organization meet its business goals? Was the result profitable?

(Horton, 2001)

that matter, not the format or delivery of the training. Horton's adaptation of the four levels, therefore, is primarily about identifying methods of data collection that are uniquely suited to the online environment. Several examples of these methods appear in Table 6.

Table 6: Horton's adaptation of Kirkpatrick's four levels

Level	Examples of Data Collection Methods
1 – Response	Online polls and ballots to ask for learners' feedback Blogs for reflection on learning Chat rooms for conducting a focus group
2 – Learning	Online quizzes Authoring tools with self-check features
3 – Performance	Questionnaires on job performance Reports from HRIS systems
4 – Results	Spreadsheets for quantifying information Web-based surveys on perceived value of program

(Horton, 2001)

Horton noted that a comprehensive evaluation gains input from many constituents: the learner, instructors, program administrators, and organizational executives (Horton, 2001). He also pointed out that one of the primary benefits of collecting data in e-learning is the ability easily and frequently to obtain formative data, allowing for improvements throughout the learning event (Horton, 2001); many traditional training events, on the other hand, focus on summative data provided by learners at the end of the training.

Horton's model, however, failed to address the unique pedagogical aspects of the e-learning environment. In limiting his adaptations of Kirkpatrick's four levels to "employ[ing] some different technologies to the evaluation process," Horton did not recognize critical topics in the e-learning environment such as engagement, the potential of constructivist approaches, and instructional design issues. Additionally, Horton's model was primarily directed to training in the corporate environment. While there is much to learn from training and education in the corporate world, academic instruction, by its very nature, has different goals and objectives, and different environmental and

institutional factors impact its evaluation process. Faculty development and student services are just two of the issues that are not addressed in a corporate-training evaluation model.

Another traditional model adapted for online learning is the CIPP (context, input, process, and product) model. Created by Donald Stufflebeam, CIPP “recognizes essential types of decisions encountered in education, planning, programming, implementing, and recycling (Chapman, 2006). Stufflebeam originally developed the CIPP model in the 1960s as a solution for public schools that needed to evaluate federally funded projects (Stufflebeam, 2003). According to Chapman, who used the CIPP model for online program evaluation, the CIPP model “places emphasis on guiding planning, programming, and implementation efforts, and the model emphasizes that the most important purpose for evaluation is improvement (Stufflebeam, 2002, in Chapman, 2006).

Table 7 shows the four main components of the model.

Table 7: Components of CIPP model for online program evaluation

Component	Description
Context	Describes the environment, needs and goals
Input	Assesses in what ways can the goals be met
Processes	Discusses how the program operates
Product	Reviews programs results and outcomes Three sub-sections of product are effectiveness, sustainability and transportability.

(Chapman, 2006)

Chapman appears to have achieved the goal of creating a theoretically based evaluation for online programs and, more importantly, demonstrated that such an evaluation can and should result in action items contributing to the ongoing quality and improvement of the program. The study produced a roadmap for following Stufflebeam's CIPP model of evaluation that can be adopted by other programs. After a review of the data collected and questions asked in the surveys and interviews, however, it appears that this model focuses primarily on summative, quantitative data and ignores the importance of understanding the learning process and specifically the learning process in the online environment.

The e3Learning (enrich, extend, evaluate) model of evaluation, designed specifically to evaluate online college courses in a pragmatic way, has been used prolifically by three different universities in Hong Kong (McNaught & Lam, 2005). The purpose of the e3Learning model is to “assist teachers to better exploit the possibilities of web-assisted teaching by offering a range of services: from introducing teachers to practical ideas about using the Web in education, to helping them make better use of the functions of teaching and learning platforms . . . to developing complete course websites for the teachers” (Lam & McNaught, 2007).

The e3Learning model is “complex and multilayered” (Ruhe & Zumbo, 2009) and involves several decision matrices populated by the data from over 450 potential survey questions, administered at various times before, during, and after the course. Table 8 shows the required steps for each course evaluated.

Table 8: Required steps of the e3Learning model

Level	Activities
1 – Role of evaluation	Proposal, meetings development, implementation, reflection
2 – Evaluation process	Write plan and implement
3 – Communication	
4 – Work flow	Logistics, monitoring, data analysis, reporting
5 – Chart of roles by team member	

(Ruhe & Zumbo, 2009)

Level two, the evaluation process, incorporates the following activities:

Frame evaluation questions and select strategies →
 Develop a plan and timeline →
 Collect data →
 Analyze data →
 Decisions and action plans

(Lam & McNaught, 2007)

The e3Learning model presents both a challenge and an opportunity by its flexible nature. Lam and McNaught (2007) pointed to three areas in which the e3Learning model is particularly effective. First, the course content can be refined throughout the course implementation by the use of formative feedback. Second, summative evaluation “provides evidence of the strengths and weaknesses” (Lam & McNaught, 2007) and leads to necessary and appropriate professional development for instructors. Third, the e3Learning project has provided an avenue for “strategies [to be] disseminated to the wider educational community” (Lam & McNaught, 2007), leading to continuous improvement of the evaluation process itself.

However, while each evaluation is tailored to an individual course, providing data that can lead to course improvement, the resources required to conduct each evaluation may be substantial, because the evaluation needs to be defined for each course. This

approach may not be practical for most universities. Also, the e3Learning model is so focused on individual courses that it fails to address the programmatic and institutional factors.

Developed for Sloan-C, a consortium of online learning providers, Lorenzo and Moore's (2002) five pillars for quality online education provide guidelines to providers of online learning programs in five areas: learning effectiveness, student satisfaction, faculty satisfaction, cost-effectiveness, and access (Sloan-C web site). The purpose in developing the Five Pillars was to "share knowledge that other educators can examine and perhaps emulate, and . . . substantiate that online teaching and learning does indeed work, not just here and there, but for many people in many disciplines, in many kinds of institutions" (Sloan-C web site).

Learning effectiveness is "concerned with ensuring that online students are provided with a high quality education" (Sloan-C web site) and includes such factors as course design, pedagogy, assessment, learning outcomes. In particular, Lorenzo and Moore (2002) highlighted interaction and higher order learning as critical issues in learning effectiveness. "Learning effectiveness requires that educators understand how to build online learning environments that generate meaningful discourse and encourage deep reflection, with significant opportunities for collaboration between students and faculty and student and student" (Garrison, 2002, in Lorenzo & Moore, 2002).

Acknowledging that students who are not satisfied with their online learning experience are more likely to drop out of the program, Lorenzo and Moore (2002) identified student satisfaction as the second pillar. "Online learners, like customers, are satisfied when they receive responsive, timely, and personalized services and support,

along with high-quality learning outcomes” (Humbert, 2002, in Lorenzo & Moore, 2002). Factors impacting student satisfaction include academic services, technology support, and access to student services offered by the institution (Sloan-C web site).

Faculty support is a key aspect of online-course quality. Teaching online can be a daunting experience, but many instructors find it “personally rewarding and professionally beneficial” (Sloan-C web site). Providing the right support services to faculty can make the difference in their satisfaction; this includes addressing promotion and tenure issues, providing technical and pedagogical professional development, and recognizing the effort that online teaching requires (Sloan-C web site).

The fourth pillar is cost-effectiveness. Attention to items like infrastructure, scalability, and resources helps institutions understand an online program’s cost-effectiveness, “offer their best educational value to learners, and . . . achieve capacity enrollment” (Sloan-C web site). The final aspect of the five pillars model is access. The concept of access in this case is not limited to providing disabled students with access to learning opportunities; rather, Sloan-C viewed access as “reducing all barriers” to each part of the educational process for prospective and current students (Lorenzo & Moore, 2002).

A comprehensive model, the five pillars can be used by any higher education institution as a foundation to evaluation of their online programs. However, the model does not discuss the actual implementation of the evaluation. For example, the type and methodology of data collection are not defined. Many institutions that post their own effective practices on the Sloan-C web site focus on just one of the five pillars; it is difficult to ascertain whether or not the organizations are using the entire model. In

addition, the model does not make provisions for a process of continuous course improvement.

Ruhe and Zumbo (2009) presented an adaptation of Messick’s framework (1998) into an evaluation model that they asserted is “broadly applicable to diverse distance and e-learning environments” (Ruhe & Zumbo, 2009). The authors averred that, unlike many other e-learning evaluation models, their adaptation of Messick’s framework addressed all of the following five areas: outcomes, relevance, cost–benefit balance, underlying values, and unintended consequences (Ruhe & Zumbo, 2009).

Messick’s framework was “designed to validate standardized, paper-and-pencil tests” (Ruhe & Zumbo, 2006) and has four aspects: evidence, relevance, value implications, and unintended social consequences, each of which overlaps and informs the others” (Ruhe & Zumbo, 2006). In adapting Messick’s framework, Ruhe and Zumbo (2006) defined each of the four areas as follows (Table 9).

Table 9: The four aspects of Ruhe and Zumbo’s adaptation of Messick’s framework

Aspect	Description
Evidence	Construct validity, feedback, grading, completion rates, learner satisfaction
Relevance	Fit between content and needs of society, authenticity of course material, transfer of learning to real world
Value implications	Rhetoric, standards, stakeholders, ideologies, course goals and objectives
Unintended social consequences	Bugs, productivity paradoxes, side effects, and revenge effects

(Ruhe & Zumbo, 2006; Ruhe & Zumbo, 2009)

The four aspects of the model “are not clear-cut and distinctive but . . . overlapping” (Ruhe & Zumbo, 2009), recognizing the complexity of the evaluation process and the interconnectedness of various types of data. In keeping with the original intent of Messick’s framework to validate standardized tests, the goal of Ruhe and Zumbo’s adaptation is the collection of scientific data, whether obtained through quantitative or qualitative means (Ruhe & Zumbo, 2009). However, Ruhe and Zumbo (2009) did not limit their adaptation to test validation but created “a model of cyclical course design and evaluation.”

With seven steps in their proactive evaluation model, Sims et al. (2002) evaluated e-learning through the lens of the course itself: the content, the instructional design, interactivity, and more. Sims et al.’s model recognizes the complexity of the e-learning environment (Garrison & Anderson, 2003) and therefore focuses on the process of course development and experience of learning as much as on programmatic outcomes. The first step in proactive evaluation is to determine the strategic intent of converting learning content to an e-learning format (Sims et al., 2002). Stakeholders are identified and queried as to the motivation and potential value of placing content online. “Once the strategic intent has been defined, members of the design and development team will have a foundation on which to base the various elements of an online learning environment” (Sims et al., 2002).

The second aspect of proactive evaluation concerns the content. Sims et al. (2002) pointed out that content ranges from predetermined, static content through the more dynamic interactive communications and collaboration that can occur in an online course (Sims et al., 2002). Merely posting content in a digital format will not create an effective

learning environment; Sims et al. (2002) indicated the importance of the content's being in alignment with the learners' needs and goals. Closely tied to content is course instructional design: "E-learning should . . . reflect a variety of pedagogical assumptions about teaching and learning" (Garrison & Anderson, 2003).

Step three of proactive evaluation is "an examination of the interface design" (Garrison & Anderson, 2003), which is, according to Sims et al. (2002), "one of the most neglected aspects of online learning." The interface design, along with the course content, determines the degree to which a student becomes actively engaged in the course. Sims et al. (2002) believed that the interface should be based on "a metaphor (such as a campus, building, desktop, filing system) that will help learners navigate among components of the course" (Garrison & Anderson, 2003). Factors influencing the design of the interface are shown in Table 10.

Table 10: Factors influencing the design of the e-learning interface

Influence	Description
Information design	What procedures have been employed to ensure maximum communication of information?
Interaction design	Have the various interactivity options been catered for and communicated to the learner?
Input/output	How clear are the options for entering and accessing content and responses?
Navigation design	Does moving between resources affect continuity of delivery or context?
Aesthetics	How does the "look and feel" contribute to or detract from the communication experience?

(Sims et al., 2002)

Interactivity in the course is the fourth aspect of proactive evaluation. Based on the work of Garrison and Anderson (1998), Sims et al. (2002) identified seven types of

course interaction that require evaluation: learner–learner, learner–instructor, learner–content, learner–interface, teacher–content, teacher–teacher and content–content (Sims et al., 2002). Levels of interactivity range from “passive presentation [to] undirected exploration” (Sims et al., 2002). In the online learning environment, effective design and use of interactivity are critical to the success of student outcomes; because learners spend much of their time working independently, the type and amount of interaction becomes the primary form of communication with the course elements (Sims et al., 2002).

The fifth aspect of proactive evaluation is assessment, defined by Garrison and Anderson (2003) as “evaluating the quality, quantity and thoroughness of . . . student learning.” Because students’ participation and behavior in a course is often guided by the assessments they will face, courses should have several forms of assessment, each of which directly addresses the learning outcomes identified at the outset of the course. Assessment should include both individual and group work and will be most effective if it is “authenticated against discipline or community norms” (Garrison & Anderson, 2003). The use of the same types of assessments employed in face-to-face courses should not be a given; computer-based learning environments have features that make a variety of assessments possible, and these opportunities should be utilized when possible (Sims et al., 2002).

Step six in proactive evaluation is a review of student support. Due to the varied nature of different learners and the independent nature of online learning, it is important to provide the type of support students may require throughout the course. These are identified as learning support, technical support, and personal support (Garrison & Anderson, 2003). Step seven is “assessing the degree to which outcomes have been met”

(Garrison & Anderson, 2003). Factors in this assessment include course-level issues such as individual student learning outcomes and course feedback, as well as programmatic and institutional issues such as meeting accreditation requirements, processes for continuous course improvement, and financial factors such as affordability for the students and return on investment for the institution (Garrison & Anderson, 2003).

The proactive evaluation model appears to be very comprehensive. It focuses strongly on the student learning experience, as evidenced by the focus on course-design issues. The model spans all phases of a course, from planning to outcomes. The attention given to programmatic and support issues, however, seems lacking in comparison to the design issues. Additionally, Sims et al. (2002) did not present a plan for implementing the model, so while the factors that need to be considered in the evaluation are clearly delineated, how to actually conduct the evaluation is not defined.

Standards and Accrediting Agencies

A number of organizations have published standards or guidelines for the evaluation of online courses and programs. The purpose of such guidelines is to “assist institutions in planning distance education and to provide an assessment framework for institutions already involved in distance education” (Middle States Commission on Higher Education, 2011). Additionally, these guidelines are conceived for use by evaluators of distance education (Middle States Commission on Higher Education).

The U.S. Department of Education warned that “the rapid increase in the number of institutions offering distance education courses and programs in the last decade, and the pressure to launch distance education initiatives, c[ould] lead an institution or program in directions that are not congruent with its mission” (2006). In response, the

Department of Education (2006) recommended that institutions of higher education “review a sample of syllabi to see whether course descriptions and learning objectives are clearly stated and whether the assignments and other assessment strategies are mapped, or connected to, the learning objectives.” They specifically addressed the evaluation of distance learning with the following recommendations (2006):

- It is a good practice for reviewers to look at course evaluations, and to interview faculty about how they have used the course evaluations to improve their courses.
- In institutions where courses are developed centrally and individual sections are taught by faculty who were not involved in the original development, it is a good practice for reviewers to confirm that there is a mechanism in place to get information from the instructional faculty on how the courses can be improved, and that this is reflected in course revisions.

Evaluation was also addressed by the regional accrediting board known as the Middle States Commission on Higher Education (MSCHE). The MSCHE indicated that it is important that “evaluation strategies ensure effective communication between faculty members who design curriculum, faculty members who interact with students, and faculty members who evaluate student learning” (2011).

Guidelines for instructional design are also included in accrediting guidelines. Another regional board, the Southern Regional Education Board (SREB) addressed instructional design with this standard: “a course [should] use learning activities that engages students in active learning; provide students with multiple learning paths to master the content based on student needs . . . and provide ample opportunities for interaction” (2006). Further guidelines include the following:

- The course is organized into units and lessons
- The unit overview describes the objectives, activities and resources that frame the unit. It includes a description of the activities and assignments that are central to the unit.

- Each lesson includes a lesson overview, content and activities, assignments, and assessments to provide multiple learning opportunities for students to master the content.
- The course is designed to teach concepts and skills that students will retain over time.

The standard for course evaluation for the SREB is as follows: “The course is evaluated regularly for effectiveness, using a variety of assessment strategies, and the findings are used as a basis for improvement. The course is kept up to date, both in content and in the application of new research on course design and technologies” (2006). Understanding the guidelines for both instructional design and evaluation help provide a framework for evaluation of online-course design.

Evaluation of Online Programs and Courses

The scope of an evaluation of online programs can be quite large. “Comprehensive evaluation includes measures of satisfaction, perceptions of learning, costing and cost benefits, and other criteria for program success as defined by any or all relevant stakeholders or participants” (Garrison & Anderson, 2003). Also important to the evaluation process is “assess[ing] the program, determin[ing] a roadmap for program improvement, [and] provid[ing] a framework for future program decision making (Chapman, 2006). First, however, it is important to understand why the evaluation of online degree programs should be undertaken at all.

It is critical that institutions of higher education evaluate their online programs because too many online programs have failed to meet institutional goals and hence have ceased operations (Mandinach, 2005). Additionally, “the investment in the infrastructure for e-learning is an expensive proposition . . . and it is not without substantial risks (Mandinach, 2005). With so much at stake, each institution should evaluate “the

effectiveness of its online learning offerings, including the extent to which the online learning goals are achieved, and [use] the results of its evaluations to enhance the attainment of the goals” (Middle States Commission on Higher Education, 2011). A comprehensive review of the literature reveals many reasons to evaluate online programs and describes numerous aspects of online programs that should be included in the evaluation (Table 11).

Table 11: Reasons to evaluate online programs and courses

Aspects of Evaluation	Reasons to Evaluate	Research
Accountability	Determine return on investment	Horton, 2001; Kirkpatrick, 2006; Lorenzo & Moore, 2005; Ruhe & Zumbo, 2009
	Hold participants accountable	Horton, 2001
	Instructor activities	Palloff & Pratt, 2003
	Accreditation purposes	Mandinach, 2005; Schankman, 2005
	Determine whether to continue programs	Kirkpatrick, 2006
Effectiveness	Student achievement	Lorenzo & Moore, 2005; Ruhe & Zumbo, 2006; Schankman, 2005
	Student satisfaction	Lorenzo & Moore, 2005; Schankman, 2005
	Faculty satisfaction	Lorenzo & Moore, 2005
	Learning environment	Sims, 2002
	Instructional design	Sims, 2002
Impact	Enhance learning	Horton, 2001; Mandinach, 2005
	Improve program quality	Chapman, 2006; Horton, 2001; Kirkpatrick, 2006; Mandinach, 2005; Ruhe & Zumbo, 2009
	Increase retention	Kember, 2007; Schankman, 2005
	Post-graduation job performance	Schankman, 2005
Organizational change	Improve decision making	Horton, 2001; Kember, 2007; Ruhe & Zumbo, 2006
	Policy issues	Mandinach, 2005
	Institutional support services	Sims, 2002
	Strategic planning	Sims, 2002
Unintended consequences	New pedagogical approaches	Mandinach, 2005; Ruhe & Zumbo, 2006
	Improve instruction	Mandinach, 2005

A few examples exist in the research literature of online program evaluations at the university level. Using Stufflebeam's CIPP model, Chapman (2006) conducted an evaluation of a master's-level program in training and development. Program administrators decided to undertake a comprehensive evaluation when they realized that current reviews focused only on outcomes and not on improvement and that "there are certain characteristics of online degree programs that are not addressed in standardized review processes" (Chapman, 2006). The plan for evaluation included the analysis of extant data, student surveys, and interviews with faculty members. While the components of the plan were extensive, Chapman (2006) presented only the evaluation plan and did not include the actual results of the evaluation. However, she indicated that "items seen as problematic . . . were translated into action items to be addressed, items . . . lower than [program] standards were translated into areas needing improvement, themes emerging from the interviews were reviewed for their importance, [and] items deemed critical to program quality were translated into action items" (Chapman, 2006).

The standards described in the Benchmarks for Success in Internet-based Distance Education (The Institute for Higher Education Policy, 2000) formed the basis of an evaluation conducted by Martinez, Liu, Watson, and Bichelmeyer (2006). Using a mixed-methods approach that included interviews of faculty and administrators and student and alumni surveys, the researchers evaluated a master's degree program in Instructional Design and Technology. The overall findings were presented, but two major themes were discussed as particularly important. First, technology was seen as a major concern for all stakeholders—administrators, faculty, and students (Martinez et al., 2006). Feedback on the institution's open-source learning-management system was negative, indicating a

need to review the features of and issues surrounding the system. The second notable area was faculty, which received highly positive comments (Martinez et al., 2006). Students identified the faculty's reputation as a strong factor in their attending the institution and noted that faculty interaction was important; however, the institution had a very high ratio of adjunct to full-time faculty, and students expressed an interest in having more interaction with the full-time faculty.

The literature produced significantly more studies about online-course evaluations than online-program evaluations. Lam and McNaught (2007) have used their e3Learning model to evaluate more than 70 courses. They conducted a meta-analysis of all the evaluations to uncover the trends discovered in and implications of utilizing their model. Three major conclusions emerged from their analysis. The first related to the quality of course materials, indicating that "where formative evaluation occurred, there was refinement of materials during the development process before implementation took place" (Lam & McNaught, 2007). Second, summative evaluation has helped identify areas of staff development for faculty (Lam & McNaught, 2007). Lastly, Lam and McNaught (2007) determined that "lessons learned in the early [projects] were naturally fed into later [projects]." Lam and McNaught (2007) used these findings to support their belief in the importance of conducting evaluations and their model in particular.

Romero and Haughten (2008) used the course improvement matrix to include feedback from adjunct instructors in the evaluation of online courses. The course improvement matrix was created by an online instructor "to identify instructional issues based on student feedback, examine the course content, and propose theoretically sound prescriptions for solving these instructional design issues" (Romero & Haughten, 2008).

This instructional design team adopted the course improvement matrix to address the “challenge to manage the periodic revision, update, and maintenance of online courses” (Romero & Haughten, 2008). Unlike face-to-face courses, which allow faculty continuously to adapt and update instructional techniques as needed, online courses require a more formalized process of feedback and evaluation to enable improvement. This study suggests that it is critical to involve all faculty, full-time or otherwise, in the course-improvement process, because they provide the primary contact for students in the course.

The demand-driven learning model (DDLML), a foundation for online course evaluation and improvement, was used by MacDonald and Thompson (2005) in an online graduate education course. Working as a team, the course instructor, teaching assistant, and instructional designer utilized DDLML and discovered seven themes that emerged from the evaluation. First, learners’ needs evolve throughout the term of the course. Second, students welcomed efforts to create a sense of community. Third, technology can be as intimidating to faculty as it is to students, but confidence grew throughout the course. Bi-weekly surveys revealed the fourth theme, which was that perceptions of engagement and interaction did not change significantly throughout the course. The fifth theme confirmed that most learning occurred through social constructivism—that is, learners developed knowledge as they “crafted their paper, exchanged feedback . . . and shared ideas in the online discussion groups” (MacDonald & Thompson, 2005). The importance of integrating support tools into the course was the sixth theme. Last was a greater awareness on the part of the students and faculty of both the benefits and

drawbacks of the online learning environment. With these themes, MacDonald and Thompson (2005) were able to improve the design of the online course.

A goal of high quality in all online courses spurred Kidney, Cumming, and Boehme (2007) to develop strategies that include a review of instructional design of the online course. Considering elements such as “the sequence of learning objectives and modules involved for a course . . . the learning materials, readings, activities, quizzes, tutorials, exercises, and discussions,” their plan for review defined how to assess each of these components and recommended a proactive approach by evaluating the course throughout the development phase. According to Kidney et al. (2007), the personnel involved in the review include the evaluator, the instructional designer, faculty, and management. By situating the review before course delivery, the team sought to enable schools to deliver quality courses from the outset.

Using Herrington and Oliver’s (2000) situated learning model for the instructional design of online courses, a constructivist-based model, Hosie, Schibeci, and Backhaus (2005) developed a checklist for online learning in higher education. This tool, the Quality Online Learning Checklist, provides a means for evaluating the design of an online course that is based in the theoretical foundation of the situated learning model. While not an exhaustive means of evaluating the design of an online course, this checklist can be “useful for indicating the likely pedagogical quality of online learning materials in higher education” (Hosie et al., 2005). The checklist was intended to provide faculty and instructional designers with a consistent and pedagogically sound way of “investigat[ing] the potential effectiveness of online units through a determination of the scope and extent” of the elements of the situated learning model (Hosie et al., 2005). The checklist

contains three sections—pedagogies, resources, and delivery strategies—each containing a number of items (Table 12) (Hosie et al., 2005). Additionally, the checklist is based on the assumption that the course is being delivered via a commercial learning-management system such as Blackboard (Hosie et al., 2005).

Table 12. Quality online learning checklist

	Always	Sometimes	Never
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 			
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 			
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 			

Conclusion

Instructional design is a critical part of the process of developing online courses.

Although much remains to be learned from the traditional models of instructional design,

it is evident that online courses require a deeper understanding of the environment in which the learning takes place, as well as of the learning approaches best suited to those environments. Considering the opportunities offered by the media used in online courses, along with the growing importance that educators are placing on meaningful learning, it is critical that educators and designers understand the pedagogical foundation for online course design. In answer to this need, models of instructional design for online courses refer to designing a learning environment as opposed to a series of instructional tasks.

The models of instructional design for online courses share a number of features: they are less linear than traditional instructional design models, they focus on the learner and learner activities more than on the teacher and teacher activities, they create a context for learning, and they require far more resources than other types of instructional approaches. The eight aspects of the situated learning model (Herrington & Oliver, 2000) combine to form a comprehensive instructional-design model: authentic contexts, authentic activities, expert performances, multiple roles and perspectives, collaborative construction of knowledge, reflection articulation, coaching and scaffolding, and authentic assessment.

Evaluation of online-course design should be undertaken in order to determine whether course learning goals have been achieved; however, attempts to evaluate online-course design have primarily occurred as part of an overall evaluation, either of an online program or of broader online-course issues. Just as traditional instructional-design models do not meet the particular demands of the online learning environment, the adaptation of traditional evaluation models seems to have fallen short of what is truly

needed: a model that homes in on the instructional design of the online course and specifically addresses whether the design has impacted course learning goals.

Owen's (2006) interactive evaluation model offers a strong foundation for such an evaluation process. Interactive evaluation seeks to determine whether or not a program (course) is meeting its stated goals and how it can become more effective (Owen, 2006). Additionally, this model explores how organizations can adapt to support the program. Interactive evaluation is concerned with continuous improvement and the empowerment of those individuals involved in the day-to-day implementation and management of the program (Owen, 2006).

Further, the Quality Online Learning Checklist (Hosie et al., 2005) uses the situated learning model as a foundation and provides a consistent and meaningful way of evaluating the design of online courses. This tool, used as part of an interactive evaluation, can provide valuable insight into the learning effectiveness of an online-course design.

Chapter 3: Methodology

This chapter will describe the methodology and processes for conducting this research study. The purpose of this study was to gain an understanding of online-course design evaluation and ascertain how this process can impact the evaluation practices for online-course design. Further, the perceptions and experiences of participants in this process were analyzed to elucidate the impact of such a process. This investigation was a qualitative study based on design research about how course-design evaluation can be monitored and/or improved. Design research is concerned with what can be learned from the *process* of implementing a potential solution. Design researchers do not expect always to get it right on the first try; rather, they look at what works and what does not, with the aim of refining the solution in iterative cycles. At the same time, design research uses rigorous research approaches that enable researchers to generalize findings to other cases.

The problem of continuous course-design improvement is well-suited to the design-research approach. Design research addresses complex issues in a real-world context. It involves collaboration between practitioners and researchers with the goal of solving a problem or introducing change in educational practices. In essence, this study evaluated the evaluation process for online-course design with the specific goal of changing practice and improving outcomes for all parties involved in online learning.

A number of studies have demonstrated the effectiveness of design research. Sharma and McShane (2008) used design-based research to clarify how a series of workshops can help improve student learning and teaching practices in a higher education physics curriculum. They found that “design-based research provides an avenue for

utilizing existing theories, developing them further and generating sharable theories” (Sharma & McShane, 2008). Blake and Doherty (2007) conducted a design-research study in order to develop the first iteration of an online course used for the professional development of higher education faculty. Their goal was to understand how the faculty reacted to the various course components, and they ultimately found several concrete improvements for the second iteration of the course (Blake & Doherty, 2007). MacDonald (2008) used design-based research to determine whether a community of practice has the potential to “contribute to effective research into [information communication technology] integration.” Design-based research was deemed a good fit for this study because it gave a voice to the members of the community of practice and resulted in an “effective and . . . synergistic combination for helping teachers and researchers identify effective classroom ICT integration practices” (MacDonald, 2008). The commonalities in these and other design-research studies are the desire to understand a problem in its real context; the opportunities offered for researchers, practitioners, and participants to contribute to the study; and the production of findings that can be used in the next iteration of the program.

Rationale

While colleges and universities have moved past the introductory stages of online learning, instructional designers and online faculty are still “looking for concrete ways to make their [online] courses work” (Palloff & Pratt, 2003). Many institutions are barely keeping up with the growing demand for their online programs. Little time is available to spend conducting research on which instructional design techniques will effectively create an engaging and learner-centered course; most decisions are being made on a trial-

and-error basis or by relying on anecdotal stories of what has worked well for others. In short, insufficient rigorous research is available in instructional design for online courses (Reeves, Herrington, & Oliver, 2008).

At the same time, the rate of growth and change in online learning and its supporting technologies demands research that keeps pace. “We cannot wait any longer for traditional . . . research approaches to provide stronger research-based design principles for online learning” (Reeves et al., 2008). Design research is quite effective for the instructional design of online learning (Reeves et al., 2008).

Introduced in 1992 by Brown and Collins, design experiments were “developed as a way to carry out formative research to test and refine educational designs” (Collins & Bielaczyc, 2004). Gradually the term *design experiments* evolved into *design research*. Design research was conceived in response to a number of needs in educational research: “the need to address theoretical questions about the nature of learning in context, the need for approaches to the study of learning phenomena in the real world rather than the laboratory, the need to go beyond narrow measures of learning [and] the need to derive research findings from formative evaluation” (Collins & Bielaczyc, 2004).

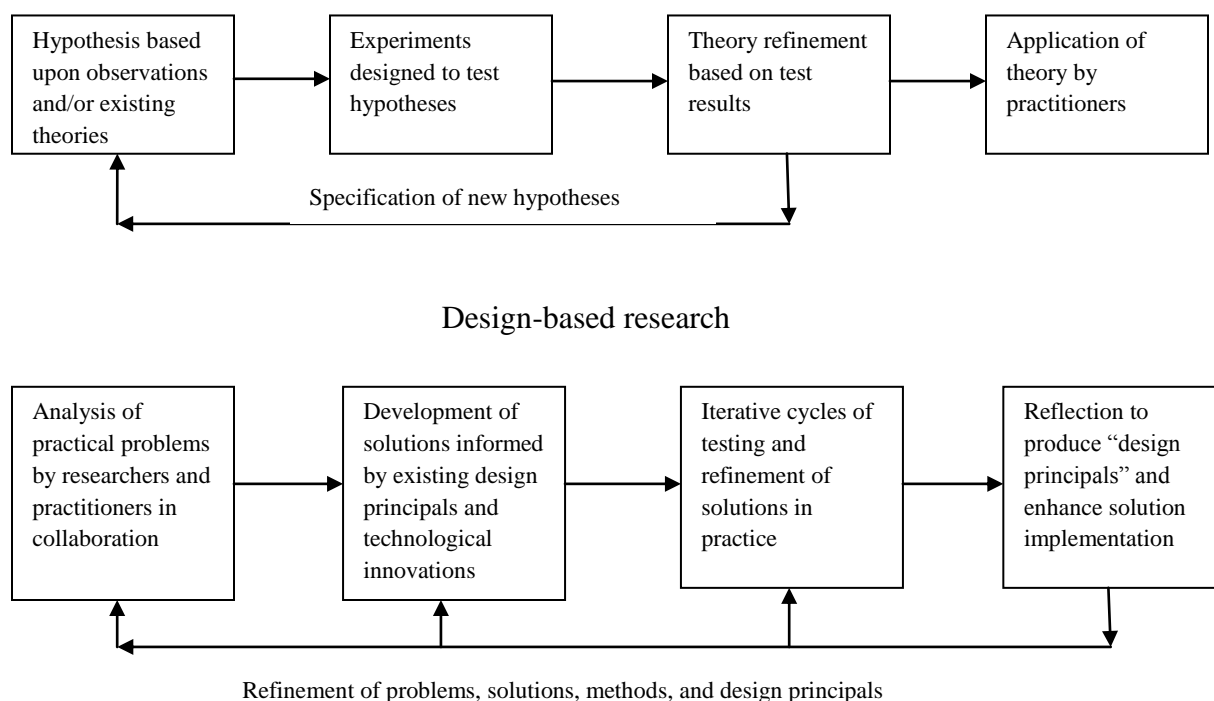
The dynamic and fast-paced nature of online learning seeks “research that generates new solutions and creates new possibilities for educational advancement” (Bereiter, 2006). Design research is an optimal framework for conducting this research in a way that seeks innovative new methods and/or solutions for problems in online learning. “This approach . . . involves putting a first version of a design into the world to see how it works. Then, the design is constantly refined based on experience” (Collins & Bielaczyc, 2004). Characteristics of design research include the following:

- “Addressing pressing complex problems in real contexts in close collaboration with practitioners” (Brown, 1992, and Collins, 1992, in Reeves et al., 2008)
- “Integrating known and hypothetical design principals with technological affordances to render plausible solutions to these real world problems” (Brown, 1992, and Collins, 1992, in Reeves et al., 2008)
- “Conducting cycles of rigorous and reflective inquiry to test and refine innovative learning environments as well as to define new design principals” (Brown, 1992, and Collins, 1992, in Reeves et al., 2008)
- Leading to “sharable theories that help communicate relevant implications to practitioners and other educational designers” (The Design-Based Research Collective, 2003)

Design research “is an emergent process [that] requires close collaboration between designers and practitioners [and] is devoted to remedying perceived shortcomings, overcoming perceived obstacles, and realizing perceived potentialities” in online learning (Bereiter, 2005). Design research sees interaction with practitioners as critical to its foundation. It fosters research leading to “a practical and effective intervention for an existing problem or intended change in the real world” (Van den Akker, 1999, in Reeves et al., 2008). Some of the benefits of design research include “offer[ing] opportunities to learn unique lessons . . . yield[ing] practical lessons that can be directly applied, and . . . engag[ing] researchers in the direct improvement of educational practice” (Edelson, 2002). As such, design research is “an important methodology for understanding how, when and why educational innovations work in practice” (The Design-Based Research Collective, 2003).

The comparison between traditional experimental (predictive) research and design research (Figure 1) demonstrates the power of design research for addressing authentic and practical educational problems (Siemens & Tittenberger, 2009).

Figure 1: Predictive research vs. design research



However, design research is not without its challenges. Difficulties can arise “from the complexity of real-world situations and their resistance to experimental control” (Collins & Bielaczyc, 2004). In essence, a significant number of variables frequently exist in the research project, not all of which can be controlled. Additionally, “large amounts of data arising from a need to combine ethnographic and quantitative analysis,” such as video, student records, focus groups, and more, may be part of the research scenario (Collins & Bielaczyc, 2004). Managing all of this data can be problematic if efficient processes are not in place. To overcome these challenges, Edelson

(2002) stated, design research must “be research driven, use systematic documentation, and include formative evaluation.” Researchers should also “look for generalizations to other contexts” in order to “develop domain theories, design frameworks, and design methodologies” (Edelson, 2002).

Using the framework of design research, this study was a qualitative case study of five online courses. Identified by Creswell (2003) as a major strategy for qualitative study, case studies involve “immersion in the setting” (Marshall & Rossman, 2006) and are frequently used when the focus of the study is a group, organization, event, activity, or process (Creswell, 2003; Marshall & Rossman, 2006). One of the most powerful aspects of the case-study approach is its ability to understand how or why a particular phenomena occurs (Yin, 2009). Gaining insight into the experience—the perceptions, opinions, and feelings of participants, the impact of changes in process or policy, and the supporting or challenging influences—is a major goal of case-study research. While experimental research may be the gold standard in determining the cause and effect of a phenomenon, it is unable to show how or why something occurred.

This study sought to answer the following questions, which were served well by the case-study approach:

1. Which components and activities of the course design evaluation are deemed valuable and why?
2. What factors support or challenge the evaluation process for online-course design?
3. What is the perception of the shared experience of evaluating the design of an online course?

In a research study designed to improve current practices, a case study can have an immediate impact on applied practice. Controlling all the factors in this study, as would occur with experimental research, would not only have been practically unrealistic but also would not have taken into account the contextual richness and complexity encountered via an ever-changing set of individuals, course goals and curricula, and policies in day-to-day practice.

Concerns about the case-study approach include a possible lack of rigor and the ability to generalize findings (Yin, 2009). The first concern can be mitigated by diligently following a well-constructed research plan based on “a rigorous methodological path . . . [including] a thorough literature review and careful and thoughtful posing of research questions . . . [and] a dedication to formal and explicit procedures” (Yin, 2009) when conducting the research. The use of a model for qualitative research design, such as that of Maxwell (2005), helps guide the researcher through these steps (Maxwell, 2005). By creating relationships between the research goals, conceptual framework, research questions, research methods, and validity, Maxwell’s (2005) model helps provide the researcher with a roadmap to ensure that the study is sound and meets stringent requirements of rigorous research.

Yin (2009) addressed the issue of generalization by noting that “case studies . . . are generalizable to theoretical propositions and not to populations or universes . . . [the] goal will be to expand and generalize theories and not to enumerate frequencies.” In other words, a case study can still contribute to the theoretical body of knowledge despite not providing a definitive yes-or-no answer. Maxwell (2005) concurred: “The generalizability of qualitative studies is usually based not on explicit sampling of some

defined population to which the results can be extended, but on the development of a theory that can be extended to other cases.”

The Role of the Researcher

Collaboration between the researcher and practitioners is one of the hallmarks of design research. The role of the researcher was therefore especially critical in this research study. The researcher needed to work closely with all participants and gain their trust in this process. The researcher for this study was an instructional designer with more than seven years’ experience in designing and instructing online courses. In this role, the researcher had worked with dozens of faculty members, program directors, other instructional designers, and multimedia developers in the online-course-design process. This background provided the researcher with a unique ability to understand the subtleties and nuances of the research problem. “Design research is grounded in the practical reality of the [researcher], from the identification of significant educational problems to the iterative nature of the proposed solutions” (Reeves et al., 2005). Given the importance of the role of the researcher in design research, the background of the researcher was invaluable to the research process in this study.

The challenge faced by the researcher in this study was to ensure that researcher bias did not occur. Maxwell (2005) indicated that “it is impossible to deal with these issues by eliminating the researcher’s theories, beliefs, and perceptual lens.” Instead, through reflective self-awareness and an understanding of how her own knowledge and beliefs about online learning could impact the study, this researcher attempted to minimize any bias that might occur.

Context of the Study

At the time of this study, online programs at the university were being offered in a wide variety of academic areas to students who are, for the most part, adult, non-traditional learners. Although it is a traditional research-based university with a large on-campus undergraduate population, the university began offering online programs in 1996. At the time of the study, more than 4,300 students were enrolled in 80 fully online programs that include graduate and undergraduate degree programs, as well as graduate and undergraduate certificates. New programs, both graduate and undergraduate, are being continually proposed, so growth in both the student population and the number of online courses seems likely to continue.

Because the university is highly decentralized, some colleges at the university have developed their own process for online-course design; other colleges, lacking any formal process, have left the design process and decision making to individual programs or faculty members. In addition to the individualized design process that some faculty have adopted, two common approaches to course development have evolved. The first is a highly structured approach that invests a substantial amount of time and effort in designing and developing a new online course, and then requires all faculty teaching the course to use this master version. However, the course is only formally reviewed and modified on a periodic basis, sometimes as long as two or three years later. The second approach is to start from scratch each time a course is taught. This approach can yield wide-ranging results that are dependent upon the faculty member's comfort with the technology of online courses, knowledge of best pedagogical practices for online instruction, and motivation for teaching online.

The combination of these varied efforts in course design has resulted in an inconsistent level of quality in the university's online courses; some faculty members, either on their own or working with an instructional designer, have designed high-quality courses, while others have not. The challenge currently faced at the university involves striking a balance among individual college and curriculum requirements and processes, strong faculty governance, and the need to evaluate online-course design in a scalable and consistent manner. Although the decentralized approach offers the benefit of designing courses that are customized to a particular academic discipline, the question of how to effectively and efficiently define and measure a quality online learning experience is critical yet daunting.

The university is also addressing a second major concern: creating a forum to engage faculty members and instructional designers university-wide in a discussion of the best instructional approach for the online environment, and how that approach might impact student engagement and achievement of learning goals. This is part of a larger initiative on online learning in general at the university, recognizing the importance that online learning plays in the university's future. The time therefore seemed ripe for identifying a means of contributing to a larger discussion of quality online-course design. The question was how to do this in a scalable and effective manner.

Data Collection Plan

The researcher obtained IRB approval for the study prior to all data collection.

Sampling plan. This study investigated five online courses at different colleges within the university. The decision to conduct the research at a single university was made based on accessibility for the researcher, both in terms of the individuals involved

in the design and instruction of online courses and in terms of the technology being used to deliver the online courses. Additionally, different colleges were selected because the university's online-course design and evaluation processes are not standardized; therefore, it was expected that the researcher would gain access to different practices and perceptions, particularly as these practices might relate to specific curriculum issues.

Permission to conduct the study was obtained by contacting the dean or the associate academic dean at each college. Initial contact occurred via an email outlining the study (see Appendix A) and the role of the participants. After permission to conduct the study was received, specific courses and faculty members were identified and contacted. Again, initial contact was made through email, with a follow-up phone call to confirm participation and commitment to the study. Specifically, the following information was included in all communications with potential participants: the purpose of the study, the participants' required time commitment, the process that would occur for the study, and the benefits of participating in the study.

Although cases were selected from different colleges, each case had to meet the following criteria:

- Commitment from the college leadership (dean or associate academic dean) had to be given for their college to participate in the study.
- The course had to be delivered fully online or be a hybrid course in which more than 50% of instruction occurred online.
- The researcher had to be allowed access to the online course. A "clean" version of the course, i.e. one without any student data, would suffice.

- The following individuals from each case needed to participate: the faculty member who developed the course and the instructional designer, if there was one. Optional participants included the program director or department head and other faculty who had taught the course in the past.

Participants in the study were expected to:

- Provide a course description and the course learning objectives to the researcher.
- Meet with the researcher for approximately one hour before the start of the evaluation to complete the faculty survey.
- Complete a course-design evaluation including the Quality Online Checklist and a matrix aligning course learning objectives with course elements and a survey.
- Meet with the researcher and other participants (each course's participants met as a separate group) for approximately one hour for a focus-group interview after the course had concluded and the evaluation was complete.

Participants in the study remained anonymous, and courses were identified only by topic area to protect individuals' privacy.

Site. The researcher utilized on-campus locations such as offices, conference rooms, and classrooms to meet with participants in the study. These locations were convenient and comfortable for the study's participants.

Methods. The following methods were used to obtain data for this study:

- Analysis of evaluation artifacts
 - Course description and learning objectives
 - Faculty survey – completed by any and all participants for each course and the researcher

- Completed Quality Online Learning Checklist (Hosie et al., 2005) – completed by any and all participants for each course and the researcher
- Completed matrix aligning course elements with course learning objectives
- Interviews

Analysis of evaluation artifacts. Design research calls for an intervention that addresses a complex and real problem (Reeves et al., 2008). In this study, the intervention was an evaluation of online-course design. The evaluation was conducted based on the framework of Owen's (2006) interactive evaluation. In addition to the online course itself, artifacts used during and produced from the evaluation included the course description and learning objectives, a completed Quality Online Learning Checklist (Appendix B), a completed matrix aligning course elements with learning goals (Appendix C), and a faculty survey (Appendix D).

Artifacts such as these are “useful in developing an understanding of the setting or group studied . . . and can be quite informative” (Marshall & Rossman, 2006). Other benefits of using artifacts in a research study include the convenience of accessibility and use and a researcher's ability to “obtain the language and words of participants” (Creswell, 2003) in the study. Additionally, analysis of content is “unobtrusive and nonreactive” (Marshall & Rossman, 2006). Additionally, such artifacts are “stable” (Yin, 2009) and therefore can be reviewed over a period of time.

In this study, the use of a design research framework made the analysis of these artifacts critical to developing an understanding of online-course-design evaluation and answering the research questions. The evaluation both provided the study's artifacts and

acted as the intervention to which participants are responding. More importantly, the analysis of the artifacts helped guide the interviews of the participants in the study. The researcher had no problems in obtaining the artifacts for this study.

Interviews. Interviews in case studies are generally viewed as “guided conversations rather than structured queries” (Yin, 2009). They are an effective means of gaining meaningful and detailed data about the participants’ experiences and perceptions. Yin (2009) identified two goals for structuring interviews: “to follow your own line of inquiry, as reflected by your case study protocol; [and] to ask your actual (conversational) questions in an unbiased manner.” With these two guiding principles, the interviewer seeks to elicit in-depth information from participants, providing details and insights into the subject that would not be obtainable in any other way.

Interviews were conducted in this study with the participants involved in a given case. Therefore, five interviews were conducted—one for each case. Each interview was planned to last approximately one hour. The researcher found all participants cooperative and interested in taking part in the interviews.

The researcher began with loosely structured, open-ended questions informed by the analysis of the artifacts and observation. These broad questions were followed up with questions that emerged from the dialog between the participants and researcher. The dialog focused on eliciting feedback that addressed the research questions. The researcher’s knowledge and experience in the field helped support the interview process, particularly when the dialog strayed from the initial questions. All interviews were audio recorded to ensure accuracy in transcribing the discussions. Additionally, an independent

observer was used during three of the interviews for purposes of verification. Appendix E contains the protocol for the focus-group interview.

Table 13 demonstrates the process of data collection and specifies which data were collected for evaluation purposes and which data were collected for the study.

Table 13: Data collection

	Evaluation Data	Study Data
Analysis of evaluation artifacts		X
Course description and learning objectives	X	
Faculty survey	X	
Completed Quality Online Learning Checklist	X	
Completed matrix aligning course elements with learning goals	X	
Interviews		X

Data Analysis

The data collected from this study, including evaluation artifacts and transcripts from the interviews, were rich and descriptive, indicating that the analysis required a complex and multi-layered approach. Maxwell (2005) noted the importance of including data analysis in the overall design of the methodology rather than as an after-thought to be determined once data were collected. Just as important is an approach that coheres with the rest of the research study (Maxwell, 2005). Data analysis in this study, therefore, was structured on the critical-incidents framework. A key goal of this framework is discovering “important and critical events that have shaped later decisions or actions” (Krueger & Casey, 2009). The critical-incidents framework is complementary to design research because it is frequently used to “develop theory [and] identify important

ingredients related to the success or failure of a program, organization, or concept” (Krueger & Casey, 2009).

The critical-incidents framework guided data analysis through the use of four key tasks: determining the critical incidents in the evaluation of online-course design; eliciting participants’ arguments and rationales for identifying critical incidents; observing how faculty, instructional designers, and program managers describe their experience in the evaluation of online-course design; and identifying the subtleties or unique factors that can impact a critical incident in the evaluation of online-course design. Each of these tasks was informed by the research questions; as Krueger and Casey (2009) stated, “difficulties emerge . . . when there is a mismatch between analysis resources and the problem, [resulting] in inadequate analysis of a complex problem of major concern.”

Analysis occurred as data were collected and continued concurrent with the collection of additional data. The following steps were taken as part of the data analysis plan: organization and review of data, categorization of data and development of themes, the creation of a narrative about the data, and interpretation of the data.

Organization and review of data. The data collected from this study were compiled so that the researcher could review the evaluation artifacts and read the transcripts of the interviews and the observation field notes. By spending time becoming familiar with the data, the researcher was able to “develop tentative ideas about categories and relationships” (Maxwell, 2005).

Categorization of data and development of themes. Silverman (2005) warned that categories should not be predetermined by the researcher but should evolve as the

data are analyzed. Maxwell (2005) suggested the use of both substantive and theoretical categories for coding. Substantive categories allow participants' experiences and beliefs to become part of the data that is coded, while theoretical categories are connected either to current or developing theory (Maxwell, 2005). Both substantive and theoretical categories are developed organically, as opposed to topical categories, which are pre-determined by the researcher and can limit understanding of the data (Maxwell, 2005).

The researcher reviewed the categorized data for emerging themes. Themes that appeared frequently, as well as data that were particularly unique, received attention when themes and categories were developed for the analysis.

Creation of narrative and visuals. Categorized data needed to be made accessible to readers of the study. In order to do this, a narrative was developed describing the data in a coherent, text-based format. In areas where a visual representation better represented the data, such a representation was created. Themes developed in the categorization step of data analysis were viewed through the lens of the research questions. This process was iterative, as data were re-reviewed to ensure that the narrative accurately reflected the data. Additionally, the narrative contained descriptions of each case as well as a synthesis of all cases (Yin, 2009).

Interpretation of the data. After representing the data in text and/or visual form, the researcher interpreted the data. The data were evaluated in order to shed light on the research questions in this study. As understanding of the data and its significance emerged, the researcher sought to provide insight into the research topic, connect these findings to theory, and suggest areas for further study. More importantly, because this

study was based in design research, the researcher sought to illumine a path toward a more effective method of online course evaluation that could be practically applied.

The researcher followed the parameters suggested by Yin (2009) for high-quality analysis. First, the analysis included all evidence collected and not just evidence that supported the researcher's own bias. Second, significant alternative explanations of the data were explored. Third, the analysis homed in on the most significant findings of the study. Last, the researcher attempted to "demonstrate awareness of current thinking and discourse about the . . . topic" (Yin, 2009). Adherence to these standards was intended to ensure that the interpretation of data was sound and accurate.

Methods for Verification

Both validity and reliability were addressed to verify this study's findings.

Internal validity is the degree to which researchers can be confident that their findings are accurate. More specifically, in qualitative research, internal validity is "the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account" (Maxwell, 2005). The richness and complexity of a qualitative study make it powerful, yet those same aspects also make it challenging to address the study's validity (Silverman, 2005). The key to validity in qualitative research is found in alternative explanations of the data: "Because real life is composed of different perspectives that do not always coalesce, discussing contrary information adds to the credibility of an account" (Creswell, 2003). Silverman (2005) named the use of deviant-case analysis as one of the strongest ways to ensure validity in a study. In this approach, "all data must be . . . accounted for" (Silverman, 2005), and the exceptions should be explored in depth to

understand what factors impact the exception and how those factors relate to the interpretation of the study.

In addition to deviant-case analysis, the researcher used several strategies to address internal validity. Multiple methods of data collection were conducted in this study (evaluation artifacts, interviews, and observation) to support the study's conclusions. Member checks of the data enabled participants to confirm that the data collected accurately reflected their perspectives. An outside observer was present during the focus-group interviews to ensure the accuracy of the data collected during the interviews (see Appendix F for the biography of the outside observer). Finally, researcher bias was reduced as discussed above.

External validity addresses the extent to which the findings of the study are generalizable in another setting. In this study, the researcher attempted to mitigate this concern by using five different case studies, providing data from varying contexts and involving numerous individuals in each case. However, the degree to which external validity can be applied in a qualitative study is limited due to the unique factors of each case. Maxwell (2005) indicated that, instead of basing external validity on "explicit sampling of some defined population to which the results can be extended," the researcher should use the "development of a *theory* that can be extended to other cases." *Reliability* refers to a study's replicability. A qualitative study paints a picture of the reality of specific cases; because that reality is based on a multitude of factors, including human behavior, it is nearly impossible to replicate that reality. Reliability in qualitative research is "usually based not on explicit sampling of some defined population to which the results can be extended, but on the development of a theory that can be extended to

other cases” (Maxwell, 2005). Through the rich description of their respective theories, researchers are able to generalize qualitative findings.

Conclusion

This study investigated five cases of the evaluation of online-course design, using the framework of design research. A qualitative, case-study approach was used and data were collected for the study, including artifacts from the evaluation, interviews, and observations of interaction among participants. Analysis of the data was guided by the critical-incident approach to data analysis, with the goal of developing a narrative that provides insight into the evaluation process for online-course design and the experiences of faculty, instructional designers, and program directors as they conduct such evaluations.

Chapter 4: Results

Overview

This study sought to illuminate an understanding of the experience of evaluating online-course design and how this process can impact the evaluation practices for online-course design. This study explored the following research questions:

1. Which components and activities of the course design evaluation are deemed valuable and why?
2. What factors support or challenge the evaluation process for online-course design?
3. What is the perception of the shared experience of evaluating the design of an online course?

This study looked at five cases of online courses. Participation in the study was purely voluntary. For each case, the faculty member met with the researcher to provide some background information, and then took some time to complete two documents evaluating his or her online course. The first document was the Quality Online Learning Checklist, in which the instructor used a Likert scale to rate aspects related to pedagogy, resources, and the delivery of the online course. The second document was a matrix aligning course elements with learning objectives, which demonstrated the alignment (or lack thereof) between course learning goals and course content and assessments. After completing the documents, the researcher interviewed the faculty member about his or her experience with the evaluation. Additionally, the researcher evaluated the courses herself.

Data collection for this study took place during the fall of 2011. The cases were diverse in nature, representing the subject areas of engineering, business, nursing, and English. Three of the cases were graduate courses and two were undergraduate courses; four were fully online and one was a hybrid course. The experience levels in teaching online ranged from a first-time online instructor to an instructor who has taught online for more than a decade. Four instructors were full-time faculty, and one was an adjunct faculty member. Notably, none of the faculty members had ever conducted an evaluation of his or her online-course design.

Individual Case Analysis

Case One

Background. Case One was a graduate engineering course taught by a full-time faculty member (Instructor One). Instructor One had been teaching online since 2006 and had developed and taught several different online courses. Instructor One had developed this course by adapting the face-to-face version of the course for online delivery. A template had been provided to him to help with this process. Course One was organized into biweekly units; each unit contained a lecture video, example problems, and a homework assignment.

Instructor One had not considered any instructional design approaches or best practices in online learning to develop the course, nor had he worked with an instructional designer or other faculty to develop the course. Some technical support had been provided to Instructor One by a centralized IT resource. The only training that Instructor One had had regarding online teaching and design was an occasional workshop that he had attended at the university. Instructor One was very interested in evaluating his

course so that he could learn more about ways to improve his online course.

Evaluation. Instructor One completed both the Quality Online Learning Checklist (checklist) (Table 14) and the matrix aligning course elements with learning objectives (matrix).

Table 14. Quality Online Learning Checklist for Course One

1 = does not meet; 2 = rarely meets; 3 = sometimes meets; 4 = mostly meets; 5 = always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 	X		X	X	X
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 	N/A		X	X	X
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 	N/A				X

Instructor One reported that he was mostly confident in completing the checklist. He did ask some clarifying questions during the interview, primarily related to the items on the checklist about inclusivity and accessibility; after a brief discussion, he preferred not to rate those two items, giving them a “not applicable” (N/A) rating.

Instructor One also completed the matrix and was able to align the course learning objectives with the various elements in his online course. (Note that specific objectives are not shown here to protect the privacy of the instructors who participated in this research.) The alignment between the objectives and the course content was very linear; all elements in Unit One were aligned to objective one, all elements in Unit Two were aligned to objective Two, and so on. Additionally, each element was identified as supporting only one objective. However, while Instructor One was able to articulate the alignment between learning objectives and course elements, this alignment was not readily apparent to someone viewing the course.

Interview. An interview was conducted with Instructor One after he completed the evaluation activities, using the Interview Protocol (Appendix E.)

Instructor One had never participated in an evaluation of the design of his online course. Further, he did not realize that instruments existed to conduct such an evaluation, whether they were the instruments used in this study or otherwise. Course One was developed five years ago and has not been substantially changed or updated since it was first developed. This decision was driven primarily by the fact that the content had not changed in those years; Instructor One admitted that he did not initially see the purpose in updating a course when the content was static. Instructor One was not sure “what he was getting into” with participating in this study, but felt that it could only help him as an

online instructor. After completing the evaluation, Instructor One felt very positive about the process, what he learned from it, and using the results as he moved forward.

Specifically, Instructor One was interested in the various items of the checklist, what they meant, and how they would be used. He felt that simply reviewing the checklist as an independent tool was informative; the concepts expressed in the checklist, particularly in the pedagogy section, had not previously been familiar to him. He felt that the pedagogy section provided the most value to him as a developer and instructor of an online course. Instructor One had designed his online course by recording videos of his in-class lectures and placing them online. After completing the evaluation, he acknowledged that something had been lost in the process. An example of such a loss is opportunities for collaboration. Although Instructor One felt that delivering his lecture in a face-to-face setting provided opportunities for his students and he to interact with each other and discuss course content, he recognized after completing the checklist that the same opportunity for collaboration did not exist for his online students. Instructor One stated that he might look for ways to build this into his course design.

Instructor One expressed strong reservations about the inclusivity and equity/accessibility items on the checklist. He did not believe these were areas over which he had any control, and therefore believed that they were of no value to him as a developer or instructor. As far as he could recall, he had never taught a student with a disability in his online course; if he had, however, he felt that it would be the task of the Office of Disability Services to deal with it. He was not against his course's being inclusive; he just did not think that ensuring inclusivity fell within his area of responsibility.

Instructor One expressed uncertainty as to whether this evaluation process, or even the results of the evaluation, would be of interest to anyone besides himself. He thought that perhaps the director of his program or some colleagues might express interest, but that was it. He did not feel that college or university administrators would be interested in this feedback for a single given course, and he was unsure how any of those stakeholders would make use of the information. Instructor One felt that the results of the evaluation were useful for an instructor but not beyond that.

Instructor One believed the most salient reason to support the evaluation of course design lay in the fact that instructors could learn from the process and possibly make their courses better. He did not think all of his colleagues would be open to this type of evaluation, but he felt that the ones who were would definitely benefit from it. Instructor One viewed course-design evaluation as an individualized effort and felt that the results of such an evaluation were meaningful primarily to the instructor; he saw little benefit to anyone else. Instructor One did not see a means for using the data from this evaluation in conjunction with other assessment data at the college or university.

Instructor One felt that the biggest challenges to conducting an evaluation of online-course design were the personal interest level and motivation of the instructor. He felt that the actual evaluation was not difficult or time-consuming; the primary challenge, from his perspective, lay in interesting an instructor in performing the evaluation in the first place. He acknowledged that this lack of interest could be related to a lack of understanding about how the results of an evaluation would be used or how the instructor could benefit from the evaluation. While the evaluation could easily be replicated by

instructors across his department and/or college, he was unsure whether that would really happen due to interest levels.

Two points about the evaluation process were indicated by Instructor One as areas needing improvement. First, he thought that the checklist and matrix would be easier to use if they were available in a digital format. In particular, he found the matrix unwieldy to complete manually. Second, he thought that receiving some training related to the terminology in the checklist would be helpful. While the researcher was able to address these questions directly with the instructor, the instructor wondered how such instruction would work on an ongoing basis, particularly in a college with no internal design expert.

Instructor One saw much value in evaluation online-course design and felt that he had learned much by participating in such an evaluation. He expressed that he would be making some changes to Course One based on what he had learned; however, he was less certain about whether he would use these tools independently to evaluate other online courses that he taught. He felt that much of the value in the evaluation came from meeting with the researcher to ask questions about the process and discuss the findings, specifically in brainstorming ideas to improve his course as a result of the evaluation. Without someone to “manage the process” of the evaluation, he did not see the practice being readily adopted.

This comment was especially insightful, because when the researcher first met with Instructor One, the instructor did not think that anyone else would be interested in participating in the evaluation with him. The collaboration in the process turned out to occur between the instructor and the researcher. Instructor One put significant value on the interaction between himself and the researcher, but at the end of the process still did

not feel that he would work with colleagues or administrators to conduct evaluations of online-course design.

Case Two

Overview. Case Two was an undergraduate nursing course taught by a full-time faculty member (Instructor Two). Instructor Two had been teaching online for nearly a decade and estimated that she had taught more than 40 online courses. Instructor Two had a Ph.D. in education and felt that she possessed a significant amount of knowledge about pedagogy and best practices in online learning. Additionally, she had experience in developing online training in the corporate world. Instructor Two used an inquiry-based approach to her online-course design because she felt it was “important for students to make discoveries of their own during the learning process.” Instructor Two had been provided with a template to use in developing her online course. Additionally, her college provided support in both instructional design and online technologies that was “there when [she] need[ed] it, but [she did not] need it that much.” Instructor Two felt that her subject matter was highly influential in her design decisions, because students frequently come to the course with biases needed to be exposed to new ways of thinking about the subject matter. Instructor Two was happy to help a doctoral candidate with her dissertation research but did not feel that she personally had much to learn from an evaluation of her online-course design.

Evaluation. Instructor Two completed both the Quality Online Learning Checklist (checklist) (Table 15) and the matrix aligning course elements with learning objectives (matrix). Instructor Two reported that she was very confident in completing the Checklist and comfortable with all of the terminology used in the checklist. She felt

that items on the checklist such as “reliable and robust interface,” “appropriate bandwidth demands,” and “corporate style” were beyond individual faculty control and possibly did not belong on this type of checklist.

Table 15. Quality online learning checklist for Course Two

1 = does not meet; 2 = rarely meets; 3 = sometimes meets; 4 = mostly meets; 5 = always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students’ achievement 					X X
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 					X X
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 					X X

Instructor Two also completed the matrix and was able to align the course learning objectives to the various elements in her online course. Notably, the alignment between learning objectives and assessments in the course was made explicit to students.

Interview.

An interview was conducted with Instructor Two after she completed the evaluation activities, using the Interview Protocol (Appendix E.)

Instructor Two had never formally evaluated her course design, nor was she familiar with any instruments that would help her conduct such an evaluation. However, she felt that she frequently conducted informal evaluations of her course, both individually and with colleagues. While she was familiar with most of the terminology on the checklist, even the items for which she did not have a formal nomenclature were items she had considered as she developed and updated her online course. However, Instructor Two still saw value in a more formal approach to course evaluation, particularly as it offered the potential to create a common frame of reference among her colleagues, and particularly other faculty that teach and work on the same course.

Confirmation of her previous design decisions was the most important take-away for Instructor Two. She most valued the items on the checklist over which she had control, because she felt that she was able to implement course-design improvements based on these items; she was skeptical as to whether a poor rating on an item such as bandwidth could be addressed in any meaningful way by her or anyone else in her organization. She did agree that most items on the checklist fell into the first category of areas under her control.

Instructor Two also felt strongly that the matrix was an important component of the evaluation of online-course design. Recognizing the move toward more and better assessment of student learning, she felt that this tool could help online course instructors become aware of how their design decisions relate to student learning. That said, however, she noted that she would like to see a tool that is easier to use than the spreadsheet used for the matrix—perhaps something more intuitive to use, like the checklist.

Instructor Two believed that other stakeholders in her college would be interested in the evaluation, such as her colleagues, other faculty who teach the same course, program administrators, and instructional-support personnel. She was not confident, however, that the “higher-ups” would have an interest in course-design evaluation; her college offers hundreds of online courses, and the likelihood that administrators would want to look at a given course’s evaluation was scant in her view. She did see a potential for college administrators to become involved if there were a way to tie the results from the evaluation into other assessment data the college were collecting, but she was hesitant to recommend that approach because many faculty might not like having their courses evaluated by their administrators.

Instructor Two felt that with some refining, this evaluation could be easily replicated in her college. She felt that making it digital, perhaps in a way that allowed multiple users to access the tools, would aid this replication. More importantly, she believed that her fellow faculty would be interested in such an evaluation and that the evaluation effort would be supported by the college administration.

According to Instructor Two, having an impact on student learning is the ultimate benefit of improving online-course design; therefore, it is also the most important benefit of supporting the evaluation. She did feel that many instructors could learn more about online-course design in general by doing this evaluation, but she noted that, without follow-through support, they might not be able to implement improvements to the course based on evaluation feedback. In fact, Instructor Two thought that the biggest challenge in implementing an evaluation of online-course design was ensuring that faculty connected the results of the evaluation to real improvements in the course: “The evaluation is only as meaningful as the improvements that can be made to the course based on the results.”

Although Instructor Two did not learn much that she did not already know, she did feel that evaluating course design was important and beneficial, first to faculty as they design the course, and secondly to students as they reap the benefits of the improved design. While Instructor Two had often informally evaluated her course’s design, she could also see the potential benefits of implementing a more formal process, especially for instructors new to or possessing little knowledge of best practices in online-course design. Instructor Two did not anticipate making many changes to her design practices going forward, but only because she was already utilizing many of the best design practices; however, she did feel that other faculty would be likely to change their design practices as they became more educated about online-course design by participating in an evaluation.

Online-course design at Instructor Two’s college was both an individual and a collaborative effort: Instructors developed courses, but the courses were then reviewed by

a faculty committee that suggested changes or improvements. Instructor Two shared the evaluation process with one of the colleagues who had assessed her course and noted that both she and her colleague felt that the evaluation would offer a good collaborative approach to reviewing online-course design. By doing the evaluation collaboratively, she stated, “we can learn from each other and educate those who don’t know as much about online-course design and not just make improvements to one course but to a lot of them.” The challenge to a collaborative approach to evaluation, acknowledged Instructor Two, is whether or not the process can be made efficient and sharable in a way that invites multiple individuals to participate.

Case Three

Overview. Case Three is a graduate business course taught by an instructor (Instructor Three) who was developing an online course and teaching online for the first time. She was quite interested in learning more about online-course design and finding out how the evaluation process could help her improve her course. While developing a course for the first time, Instructor Three had felt confident because of the instructional design and technical support she had received from college staff. In addition to attending some workshops, she had also made use of the one-on-one support provided to her. Instructor Three most appreciated the workshops in which other faculty members had shared their own experiences in developing and teaching online courses. Instructor Three’s approach to the development of her online course was to take the face-to-face course and convert it for online delivery. She did not feel that the subject matter covered in her course had any impact on the design of the course; however, she had been

concerned about creating opportunities for interaction between her and the students when designing her course.

Evaluation.

Instructor Three completed both the Quality Online Learning Checklist (checklist) (Table 16) and the matrix aligning course elements with learning objectives (matrix).

Instructor Three was not confident when completing the checklist until she had reviewed and discussed each element with the researcher. After this discussion, Instructor Three reported that she was able to complete the checklist without a problem, with the exception of the Inclusivity and Accessibility elements. Instructor Three felt that because she did not have any students identified as having a disability, these elements did not apply to her course. Instructor Three also lacked confidence in completing the matrix. Although she reported having identified course-learning objectives on the course syllabus, she had not considered an alignment between those objectives and the course's elements. However, when guided by the researcher on how to complete the matrix, Instructor Three realized that there was in fact, a high level of alignment between her objectives and the course elements. However, elements in the course that she could not align to a specific learning objective did appear.

Table 16. Quality online learning checklist for Course Three

1 = does not meet; 2 = rarely meets; 3 = sometimes meets; 4 = mostly meets; 5= always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 				X	X
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 	N/A			X	X
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 	N/A			X	X

Interview. An interview was conducted with Instructor Three after she completed the evaluation activities, using the Interview Protocol (Appendix E.)

Instructor Three had just finished teaching her first ever online course, which she had also developed while teaching. She had no knowledge of how to evaluate online-course design or what might be involved in the process. As such, while she learned many things about online-course design, she had difficulty expressing which part of the evaluation was most beneficial to her. While Instructor Three did not explicitly say so, her responses indicated that while the evaluation process did benefit her, it might have been more effective if she had had some prior knowledge or education about online-course design and delivery. Interestingly, she related more to the process of creating the matrix and appeared to appreciate the identification of a relationship between learning

Instructor Three admitted that she did not have enough experience or knowledge to say whether or not her college stakeholders would be interested in or find value from an evaluation of online-course design. She guessed that other faculty would be motivated to participate in evaluations of their own courses if they could learn as much from it as she had, and noted that the technical-support staff might also be interested, because they help faculty with course-design issues. She did not, however, see the potential for other college administrators to find value in the evaluation results. She believed that each faculty member “owns” their course and that administrators “don’t really get involved unless they think there’s a problem.”

Instructor Three felt that the evaluation would be replicable by most of her colleagues, but, perhaps because of her own inexperience, did not think it could be done without working with someone who understood the process. She did not see the

evaluation process as coming from the top down; rather, she felt it would be something an individual instructor would decide to do if he/she were interested.

Learning more about online learning and improving one's online course would be the biggest reason for undertaking an evaluation of online-course design, according to Instructor Three. She did not see this evaluation as part of any larger approach to assessment at the college or university level. While Instructor Three did not see any organizational barriers to conducting the evaluation, she thought that the individual experience and motivation of individual faculty would have a sizable impact on whether or not they chose to have their courses evaluated.

Instructor Three had had a beneficial, albeit somewhat overwhelming, experience in evaluating her course design. She learned much—and she also learned how much she still needed to learn. Instructor Three also felt that the results of the evaluation showed her that some improvements could be made to her online course's design, and that she would consider those changes and talk about them with her support staff. She did not give the impression that any changes would be implemented immediately, and while she did not state as much, she gave the impression that she needed more time to reflect on the results of the evaluation and what it meant.

Case Four

Overview. Case Four was an undergraduate English course taught in a hybrid manner. The instructor for this course (Instructor Four) had only begun teaching online one term prior to this study. After teaching Course Four as it was provided to her, she, along with some colleagues, had begun to redevelop the course. Instructor Four participated in this study to help her “rethink the design of the course.” While Instructor

Four had worked with the syllabus provided to her by the department, she had not used any instructional-design models to develop her course. She was, during this time, doing some of her own research on best practices in online learning, as well as attending workshops when they were available. Technical support was provided to Instructor Four through a centralized IT department. Instructor Four felt that the design of this course had been a collaborative effort, because many sections of the course were taught and the core group of faculty all had input, but that she had taken the lead on the course's redesign. Instructor Four had had a hard time redesigning the course as it was already developed and eventually "blew-up" the course and started over from scratch.

Evaluation. Instructor Four completed both the Quality Online Learning Checklist (checklist) (Table 17) and the matrix aligning course elements with learning objectives (matrix). Instructor Four was confident in completing the checklist; however, she had some questions about how to incorporate the hybrid aspect of her course into the checklist. After some discussion, Instructor Four and the researcher agreed that the checklist would evaluate the course as a whole entity, and not focus solely on the online elements.

Instructor Four also completed the matrix. She stated that while she had never thought about a direct alignment between course elements and learning objectives, once she understood the purpose of the matrix, she was easily able to complete it. Instructor Four was able not only to demonstrate alignment between learning objectives and course elements, but also to delineate which elements were part of the face-to-face component of the course and which elements were part of the online portion of the course.

Table 17. Quality online learning checklist for Course Four
 1 = does not meet; 2 = rarely meets; 3 = sometimes meets; 4 = mostly meets; 5 = always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 				X	X
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 				X	X
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 		X		X	X

Interview.

An interview was conducted with Instructor Four after she completed the evaluation activities, using the Interview Protocol (Appendix E.)

Instructor Four had never participated in an evaluation of online-course design but was very eager not only to do the evaluation but to put into practice what she learned from the process. She felt that both the checklist and the matrix were insightful and helpful in considering online-course design, and she saw them not only as evaluation tools but also as useful guides for developing the course in the first place. Additionally, because the course she evaluated was hybrid, she felt that the checklist had helped her determine what types of activities worked best in the online environment and which activities should be saved for face-to-face interaction.

Instructor Four was most interested in the Pedagogy section of the checklist. Having completed the evaluation, she stated that she was rethinking assessment in her course in order to make it more authentic and meaningful for the students. She also realized the potential in aligning the course content to learning objectives and said that completing the matrix had helped her rethink what type of content to use for the course. Instructor Four was very interested in creating a rich and dynamic learning experience for her students, and she felt that a better understanding of course design—online or otherwise—would be extremely helpful in meeting that goal.

Instructor Four expressed that the course-design work she does is part of the work of a bigger faculty group, all of whom teach a given set of courses. As such, they interact and share ideas about the courses. Instructor Four felt that this group of colleagues—as well as, potentially, a wider group at the college—would be interested in the evaluation of their online/hybrid courses. In fact, she invited the researcher to meet with the group of colleagues she works with to talk more about the evaluation process. However, Instructor Four was not sure that the evaluation process would be of interest beyond faculty who

were working on their own courses or learning from each other. Nevertheless, she did recognize the potential value of the tools during formal assessment and/or accreditation processes.

Instructor Four felt that online course evaluation could and should be replicated throughout her department and possibly throughout her college. She did believe it should be a faculty-driven approach, but noted that faculty should be strongly encouraged to participate in the process as a way to improve course design and, ultimately, the student learning experience. Instructor Four did not really see any barriers to such an evaluation—except, perhaps, reluctance on the part of the faculty based on how they perceive that the information from the evaluation might be used. She stressed that she believed the evaluation should be used to improve course design but not as part of any evaluation of faculty performance.

When asked how to make the evaluation process better, Instructor Four talked about possibilities for streamlining the process and automating or digitizing the collection of the data. She also felt that the addition of student feedback would be valuable, although she recognized that adding student feedback added a new layer of complexity and resource needs to the process. Instructor Four also expressed more interest in the checklist and matrix as tools for course development than as tools for course revision and asked how the tools could be “repositioned” as such.

Instructor Four found it extremely beneficial to evaluate online/hybrid course design, although possibly as part of the initial development more than after the fact. She found much value in what she had learned from the process. The evaluation process also spurred her to do some independent research to learn more about course design, so she

saw the process as one that opens doors to new knowledge about online teaching and learning. At the end of the study, she had already made, and planned to continue making, design improvements based on what she had learned, as well as making her course “design better up front.”

Because Instructor Four worked with a core group of faculty on a series of courses, she felt that there would be both interest and value in evaluation as a collaborative process among the group. To that end, she invited the researcher to meet with this group and talk more about online-course design in general and course-design evaluation more specifically. She did maintain that community participation would make the evaluation process more unwieldy, but she feels that the gains would be bigger as well.

Case Five

Overview. Case Five is a graduate engineering course. The instructor (Instructor Five) had been teaching this same course for more than five years and had not significantly updated or changed it since first developing it. Instructor Five did not use a specific instructional design model; rather, he recorded classroom lectures and put them in the course. While the lectures in both the face-to-face and online sections were the same, Instructor Five stated that the rest of the course was different due to the asynchronous discussions used in the online course. Instructor Five was not provided with a template to develop his course, and he felt that “trial and error” were his primary methods of forming the course as it was at the time of the evaluation. The topic of the course had strongly influenced its design, particularly in relationship to the use of discussion boards, as the course requires a lot of discussion and debate over ideas.

Instructor Five had not received any instructional-design or technical support in designing the course, but he did not feel that such support would have made much of a difference. He had attended several workshops on how to use the learning-management system, and he felt they were helpful to learning to use the system effectively.

Evaluation. When the researcher met with Instructor Five, the instructor reported that he had not completed either the Quality Online Learning Checklist (checklist) or the matrix aligning course elements with learning objectives (Matrix). Instructor Five claimed that “these documents don’t really apply to my course” and that “I don’t do it this way.” The researcher was surprised by this response, because at the initial meeting with Instructor Five, he had not expressed concern about either the checklist or the matrix. The researcher then decided to ask a series of questions of Instructor Five that were designed to elicit what would have been his self-completion of the two documents. The researcher discovered during this conversation that, in fact, Instructor Five was able easily to offer feedback on the checklist and describe the degree of alignment between his course’s learning objectives and the course elements. Still, at the end of this process, Instructor Five remained unsure that using the checklist and matrix could really work for him or his course. Table 18 is the Checklist as completed by the researcher. Checklist items that were not made clear during the discussion have been identified as

Regarding the matrix, Instructor Five initially felt that all of the objectives were part of all of the course elements. However, after some reflection, he indicated that it was more apt to say that each learning objective was related to one or two units in the online course; specifically, each element for that one or two units was related to the one objective being addressed for the week.

Table 18. Quality online learning checklist for Course Five
 1 = does not meet; 2 = rarely meets; 3 = sometimes meets; 4 = mostly meets; 5 = always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 			X	X	X
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 	N/A		X	X	X
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 	N/A		X		X

Interview. An interview was conducted with Instructor Five after he completed the evaluation activities, using the Interview Protocol (Appendix E.)

Instructor Five had never evaluated the design of his online course before; in fact, he had never thought about design as an important issue before. While he did not actually

complete the evaluation checklist and matrix himself, upon talking through it with the researcher he readily admitted that something could be learned from the process. More than any other instructor in this study, Instructor Five considered university assessment and program accreditation to be compelling reasons to evaluate his course. The program he taught was accredited, and documentation of learning outcomes and measures taken to ensure student learning were very important. Therefore, he homed in on the matrix as the more valuable of the two tools in the evaluation. Aligning learning objectives with student activities was a comfortable activity for him once the researcher had explained how it worked.

Instructor Five expressed ambivalent feelings about the checklist. On the one hand, he felt that certain aspects of it—for example, the Collaboration aspect—were just not important to the way he taught online. Alternatively, he asserted that “this is where it’s at; this is the stuff we have to pay attention to.” Instructor Five gave the impression that the process of the evaluation was more important than the specific findings of the evaluation. Reflecting on his thoughts about the evaluation, he felt that the process would be of value to other stakeholders in his department, and potentially the college, mostly as a way to support accreditation efforts.

Instructor Five did believe that some type of evaluation of online-course design should be used in his department, and potentially the whole college. The benefit of this would be partly in supporting instructors in designing online courses and partly in supporting accreditation processes. He believed that the biggest barriers to implementation would be (a) instructor knowledge about how to use the checklist and

matrix and (b) organizational issues, such as who would manage the process and determining how the data would be used.

Based on his own challenge with completing the checklist and matrix, Instructor Five felt that adequate preparation and education would be critical for an instructor undertaking an evaluation. Instructor Five was not sure that most of his colleagues would be able to use the checklist or matrix without such guidance. He was not sure where this guidance would come from without an internal support team in place, making it unlikely that faculty would become involved.

Instructor Five gave no indication that his design practices would change based on the results of the evaluation. He did not express interest in the evaluation as a tool for course improvement; his interest was more in the process of evaluation and how that might impact accreditation processes. While recognizing that elements on the checklist such as collaboration or engagement could have been scored higher, Instructor Five remained unconvinced that adding those elements to the course would really change the learning outcomes. Yet Instructor Five stated that he found the evaluation process beneficial as a process that his department and college should undertake. He felt that stakeholders would find the evaluation to be an informative process based on the culture of assessment in his college.

Cross-case Analysis

Which components and activities of the course design evaluation are deemed valuable and why?

While the teaching and design experience of each participant in this study varied greatly, none of them had ever formally evaluated the design of his or her online course

before. Further, while interested in participating in such an evaluation, only one of the participants had a previously established understanding as to what such an evaluation would involve. Feedback about the evaluation process was generally very positive. All participants agreed that they had learned something about their online course's design that they had not previously known or understood. While all participants saw value in the overall process, those instructors who possessed some knowledge base or experience before the process began reported getting more out of the process of the evaluation.

In general, the checklist garnered much more interest than the matrix and was the focus of more discussion during the interview process. The data learned by using the checklist seemed to be more meaningful for the participants; this outcome is not surprising, given the fact that four of the five instructors focused on the evaluation process as a means of achieving course improvement rather than as a way of supplementing institutional or departmental assessment activities.

The component of the evaluation that was most valued across by the participants was the Pedagogy section of the checklist. The elements of the checklist and the terminology used in it were new to Instructors One, Three, Four, and Five. Instructor Two, who had some background and education in the design of learning experiences, was familiar with these concepts already. The participants in general felt that the process of reviewing the checklist itself was educational and that the process of evaluating their course using it was even more so. However, Instructors Three and Five needed some preparation and background before being able to complete the checklist.

In particular, participants who had designed their courses by translating their face-to-face course directly to online delivery learned, via the Pedagogy section of the

checklist, that several improvements could be made to their course design. This demonstrated to them that more consideration needed to occur in the design of the course than including the same elements found in face-to-face delivery in the online course. Instructor One exemplified this realization when he acknowledged that the videos of his in-class lectures were not providing the same level of engagement to his online students that the original lecture had in the classroom setting.

Some components of the Checklist were deemed either unimportant or inapplicable by some instructors. Instructors One and Three specifically felt uncomfortable with the checklist elements related to accessibility and inclusivity. They saw this area as unrelated to their own responsibilities for course design and felt that the issue of accessibility for students with learning disabilities was something to be dealt with by the Office of Disability Resources if and when it became necessary. Other aspects of the checklist, such as bandwidth, were seen as beyond the control of the instructors and therefore not considered valuable to the evaluation process. Instructor Two especially felt that only those items over which she had control were a valued part of the checklist.

The matrix did provide some value to participants. Particularly for Instructors Two and Five, who identified program assessment or accreditation as a motivation for evaluating course design, the practice of aligning course learning goals with course elements was beneficial. Participants' initial response tended to be that all of the course elements aligned with the course learning objectives; however, once an example was provided to them, they were better able to understand how to identify the relationship between learning objectives and course elements—and, more importantly, why one

would create such a relationship. Feedback from Instructor Two, however, did suggest that the matrix should be easier to use if it were to be widely implemented.

Although only one course in this study was hybrid, it was clear in that case that the checklist and matrix can work for whole-course design evaluation, not just the online portion. Instructor Four, who had designed the hybrid course, indicated that the evaluation had not only helped her look at the entire course but also helped her identify which course activities would be more effective in either the face-to-face setting or the online setting. She felt that she would design a better course overall now that she better understood the pedagogy of the online course activities.

Generally, participants felt that the greatest value from the evaluation would be for themselves, as a way to improve the design of their course. Instructors Two and Four did see the process of the evaluation as something that a group of colleagues could use to create a common understanding of course design for those courses taught by numerous faculty members; Instructor Four also saw the value in using the checklist and matrix to help design the course for the first time, not just evaluate it after it had already been designed. Instructors One and Three did not see a use for the evaluation results beyond themselves as the course instructors; further, Instructor Three questioned whether it was even appropriate for college administrators to be involved in the process, as did Instructor Two. Conversely, Instructor Five put more value on the evaluation as a tool to support college accreditation efforts, as opposed to a tool for course improvement.

What factors support or challenge the evaluation process of online-course design?

With the exception of Instructor Five, the most important reason given for evaluating the design of one's online course was to improve the course's design for the

ultimate goal of providing a meaningful learning experience for students. A closely related reason was to learn more about the course-design process and online pedagogy. Thoughts were mixed among participants as to whether or not their colleagues would be interested in feedback on how to improve their courses; Instructors Two and Four felt strongly that there would and should be interest among their colleagues; Instructors One, Three, and Five were uncertain. Given these responses, it appears that one key factor for undertaking an evaluation of one's course design is the personal interest and motivation level of an individual instructor. If the instructor is motivated to learn about their course design and make improvements, the evaluation process will be successful; if not, it is almost irrelevant what the evaluation finds.

Instructors One, Two, and Four did not report any difficulty with completing the Checklist and Matrix beyond some simple questions that were quickly answered by the researcher; Instructor Three needed some initial explanation and guidance; and Instructor Five did not complete the forms on his own. None of the participants reported that the process was too time-consuming; however, several gave the feedback that a digital format would be much easier to complete and more widely usable. Instructor Four felt that with some minor refinements, this process could be easily replicated at her college; she was especially interested in the digital aspect because of its potential to enable multiple users to access an evaluation and complete an evaluation in a collaborative manner.

Some indications showed that pre-evaluation training for the instructor would be necessary. Instructor One was concerned about who could fulfill that role in a college with no internal support person for online-course design, and Instructors Three and Five

would not have completed the evaluation at all without substantial support from the researcher. Additionally, several participants noted that even once the evaluation was completed, without a support mechanism in place to help interpret the findings or discuss ideas for improving the course, it might be unlikely that changes or improvements would actually be made to the course design. An individual who can both serve as a resource for completing the evaluation and provide feedback on how to take the results of the evaluation and turn them into actual course improvements appears to be a key to success in implementing this type of evaluation.

How the results of an evaluation might be used beyond the instructor's own course improvements was a concern, and potential impeding factor, for conducting the evaluation in the first place. Concern that this type of evaluation could be used against an instructor was apparent among all participants and perhaps reflected in their stating that administrators in their colleges would generally not be interested in the results of such an evaluation. Alternatively, Instructors Two and Five recognized that the data could be helpful for assessment and/or accreditation purposes; how to balance these competing concerns remains an open question.

What is the perception of the shared experience of evaluating the design of an online course?

It was the intention of the researcher that each of the five courses would be evaluated in a collaborative manner, with the instructor involving other instructors who teach the same or related courses, an instructional designer or technical support staff, and/or program administrators. However, while it was theorized based on the literature review that this evaluation would be collaborative, that did not actually occur in the field.

As the researcher met with each of the participants in this study, a trend emerged that was solidified by the time all five cases were identified: without exception, the faculty who participated in this study declined to involve anyone else in the process. With respect to instructional designers, four of the five faculty who participated in the study did not have access to an instructional designer; the fifth instructor did; however, she did not utilize that support. Upon discussion, the faculty in the study did not understand the benefits of working with an instructional designer, so even if access to an instructional designer had existed for all participants, the researcher questions whether or not the faculty would have seen that person as a collaborator on online course design and evaluation.

Other potential participants in the study would have been peer faculty or program administrators. That the instructors in the study did not allow this type of collaboration may be reflective of a culture of silos at the University, in which each faculty member sees his or her work as their own, and not influenced by or a part of any larger purpose. This attitude suggests that the responsibility for online-course design and evaluation is the instructor's and only the instructor's; this is not surprising given the sense of ownership over the course was expressed by all participants. Further, some instructors in the study stated that they were concerned that the findings of the evaluation could be used in a negative manner if they had been made public. These findings suggest that not only is collaboration during the design and evaluation process not valued, it is potentially seen as a threat to the faculty.

Despite this, after going through the process, Instructors Two and Four stated that they could see value in sharing the process with their colleagues and would consider how to do that in the future. This was not surprising feedback from Instructor Two; she had

noted that faculty in her college often worked together to design courses. Instructor Four also expressed that several instructors teach the same course that she does and that she sometimes engages with them about designing the course. This comment seems to suggest a relationship between collaborative design and potential for collaborative evaluation. Alternatively, Instructor One expressed that he found interacting with the researcher on this evaluation both educational and engaging for him, but he still did not think that others in his department would engage in that type of interaction regarding online courses. Neither he nor Instructors Three or Five had any type of collaboration on the design of their courses.

Chapter 5: Conclusions and Discussion

The delivery of online programs at universities and colleges in the United States has grown tremendously in popularity over the past decade. Faculty who are experts in their fields must now draw on a new skill set as they design and deliver online courses. Some faculty come to this effort willingly, while others must be convinced; similarly, the level of knowledge needed to design an online course varies widely, even among faculty at the same institution or within the same college. At the same time, a growing culture of assessment has led to discussions about quality online learning experiences and how to effectively assess online-course design. The research indicates that there is still much to be learned about how evaluation can inform the online-course design and improvement process. Consequently, this study investigated the experience of evaluating online-course design and how this process can impact institutional design and evaluation practices for online courses, guided by the following research questions:

1. Which components and activities of the course design evaluation are deemed valuable and why?
2. What factors support or challenge the evaluation process of online-course design?
3. What is the perception of the shared experience of evaluating the design of an online course?

The literature review for this study explored three areas of impact for this study: instructional design for online courses, evaluation theory and models of evaluation, and evaluation of online programs. This review revealed that instructional design for online courses requires a deep understanding of the online environment as well as the learning approaches best suited to that environment; it is critical that educators and designers

understand the pedagogical foundation for online-course design. Models of instructional design are less linear than traditional models and focus on the learner and learner activities more than the teacher and teacher activities. The eight aspects of the situated learning model (Herrington & Oliver, 2000) combine to make a comprehensive instructional design model for online learning: authentic contexts, authentic activities, expert performances, multiple roles and perspectives, collaborative construction of knowledge, reflection articulation, coaching and scaffolding, and authentic assessment. The Quality Online Learning Checklist (Hosie et al., 2005) uses the Situated Learning Model as a foundation and provides a consistent and meaningful way of evaluating the design of online courses. This tool can provide valuable insight into the effectiveness of online-course design.

The study was a qualitative investigation of five online or hybrid courses at a single university. Using the Quality Checklist for Online Learning and a matrix aligning course elements with learning objectives, faculty evaluated their courses and then provided feedback and insight about the process during an interview. Analysis of each individual case, as well as a cross-case analysis, was conducted and provided rich and descriptive data in response to the research questions.

Conclusions

From the analysis of both the individual cases and the cross-case analysis, three major conclusions have emerged regarding online-course design and evaluation.

Conclusion One: A need exists for information about how to best use knowledge of online learning pedagogies when designing and evaluating online courses. The literature on online-course evaluation identifies numerous reasons for evaluating the

design of an online course; among those are assessing the effectiveness of the instructional design of the learning environment (Sims, 2002), enhancing the learning experience (Mandinach, 2005), and discovering new pedagogical approaches (Mandinach, 2005; Ruhe & Zumbo, 2006). The evaluation conducted in this study sought to open instructors' minds to each of these possibilities. The Quality Online Learning Checklist (checklist) directly assessed the instructional design of the learning environment, providing data to instructors that would enable them to enhance the student learning experience. The matrix aligning course elements with learning objectives (matrix) supported the findings of the checklist by providing a means of identifying whether course content would help students in achieving course learning objectives. The process of conducting the evaluation created an opportunity for instructors to learn about pedagogical approaches in online learning and how these approaches can inform quality course design.

The instructors in this study had varied backgrounds, experience levels, subject-matter expertise, and motivation for participating in the study and conducting an evaluation of their online-course design; this was an intentional aspect of the study's methodology. The purpose of research question one was to identify which of the many aspects of evaluating the design of an online course were most valuable to online instructors. Without exception, and despite their varied perspectives, the instructors in this study stated that they most valued the opportunity to learn more about the pedagogical aspects of online-course design.

When reviewing the results of the checklist, instructors invariably homed in on the first section, Pedagogies. In particular, the checklist addressed authentic learning,

collaborative learning, learner-centered environments, engagement, and meaningful assessments. Each of these items can be linked to important elements of constructivist-based instructional design for online courses, as described by the literature in general, and specifically by the situated learning model (Herrington & Oliver, 2000). It was clear from the discussions that occurred during the interviews in this study that many, if not all, of these concepts were new to four of the five instructors. This discovery led to conversations about what each of these elements meant, how they worked, and what they looked like in an online-course environment. While not every instructor focused on every element, every instructor did focus on at least several that they found most intriguing or relevant to their courses.

However, the instructors were not only interested in learning about the pedagogical elements of the checklist; they also wanted to know how to use them to improve their online courses' design. By participating in the evaluation, they were able to see the pedagogical elements not merely as part of an evaluation tool, but also as something real that could be directly connected to their own practice of designing their online courses. Much discussion occurred during the interviews about what the instructors could do in terms of course design to implement some of the pedagogical elements in the checklist. For example, Instructor One, who had developed his course by recording lectures in his face-to-face classes and posting them online for students to view, was quite interested in how to add an element of collaboration to his course; Instructor Three, who had just designed and taught her course for the first time, wanted to learn more about the meaningful assessment of student performance in her course.

It is interesting and worth noting that the other sections of the checklist, Resources and Delivery Strategies, were barely mentioned by the instructors in this study. Topics like use of media, bandwidth, and interface sections did not generate anywhere near the level of interest sparked by the Pedagogy section. If anything, these sections elicited negative responses, with instructors stating that they felt these items were beyond their control or scope of responsibility. The one area that generated the most negative response was the Accessibility and Inclusiveness elements; instructors who addressed these topics did so by stating that because other university resources are available to address students' accessibility needs, these aspects were not the individual instructor's responsibility.

Conclusion Two: Responsibility for online-course design and evaluation frequently lies with faculty members who have little to no understanding of or training in design and pedagogy. The process of designing and delivering an online course can be very challenging and time consuming. Compounding that challenge is the fact that “few [online faculty] have experienced distance education either as instructors or students” (U.S. Department of Education, 2006). While professional development in online design and pedagogies or consultation with an instructional designer can help support faculty who are new to online-course design and instruction, for some of the instructors in this study, that type of support was either unavailable or limited. For other instructors, the support they received focused on technical issues and/or development of multimedia as opposed to the pedagogy of online-course design or best practices in instructional design. Yet these instructors have ultimate responsibility for designing and

delivering a course in a medium that has been demonstrated to require more work and effort on the part of the instructor than traditional face-to-face teaching.

It was an important goal of this research to identify key impacts—positive and negative—on the successful implementation of an online-course design evaluation process; research question two sought to elicit this information from the participants in the study. The strongest impetus for evaluating one's online course in this study turned out to be personal motivation and interest, as opposed to departmental or institutional factors, which was not surprising considering that the instructors in this study bore the primary responsibility for the design of their online courses. At the same time that this solo approach provided motivation for the evaluation, it emphasized the fact that faculty must frequently design their online courses without the support of training in instructional design and online pedagogy, consultation with an instructional designer, or mentorship from an expert in online learning. In other words, faculty who are being asked to design online courses often do not have the skills, knowledge, or support needed to do so.

A general consensus existed among the instructors that one of the purposes of evaluating an online course's design was to enable improvements to the course design. Yet several of the instructors expressed that they did not know how to go about making the changes; further discussion revealed that this lack of knowledge problematized both the process of instructional design and the pedagogies of online learning. The one instructor in this study who did have knowledge of design and pedagogy was confident in her discussion of course improvement, while the others demonstrated a genuine interest but no ability to move forward on their own. Whether or not an instructor has a strong desire to design or make improvements to design, without some knowledge or the support

of someone with this knowledge, a good chance exists that the design will fail to contribute to the development of an effective learning environment. A further risk is that no changes will be made at all.

In the absence of knowledge about instructional design or online pedagogies, instructors are making choices about online design that are not supported by best practices or pedagogy. The approach taken by most instructors in this study to designing their courses was to create a direct translation of the face-to-face version of the course, a practice that directly contradicts best practices in design and has little or no basis in learning theory. Further, the pedagogical elements of the Quality Online Learning Checklist (checklist), derived from the constructivist-informed situated learning model (Herrington & Oliver, 2000), were largely unfamiliar to four of the instructors in this study as the basis of quality instructional design for online learning. Nor were the instructors familiar with any other model of online instructional design. The institutional expectation that an instructor should design an online course without the benefit of this knowledge or collaboration with someone who does have the knowledge is one that should be further explored; but the evidence from this study suggests it is not an effective process when it comes to designing high-quality learning environments.

Conclusion Three: A belief exists that the online-course design and evaluation process should be completed by and is only of interest to the instructor; it is not seen as a collaborative process. Owen's (2006) interactive evaluation approach is based on a premise of a practitioner-led, as opposed to top-down, evaluation. Further, it "assumes that where those responsible for a given [course] have the ability and inclination," they should be active participants in the evaluation. The intention of this

research study was that the evaluation of online-course design would be a collaborative process, involving one or more faculty, the instructional designer, and/or the program administrator. Specifically, research question three asked what the perceptions were of the shared experience of evaluating an online course's design. Despite the researcher's intention, however, the instructors who participated in the study strongly resisted involving others in the evaluation process. Clearly, these instructors saw themselves as the only persons with either the ability or the inclination to evaluate or make decisions about their courses' design.

Two factors may contribute to the lack of collaboration in evaluation of online-course design. First, four of the courses in this study were not developed in a collaborative manner; the instructors worked independently to develop their courses. The reasons for taking an individual approach to design in this study varied: for some instructors it was the lack of resources, such as a faculty mentor or instructional designer; for others, it was the belief that the course was "their" course and no one else needed to be involved. Only Instructor Four felt that she could gain valuable insight by sharing the design process with other colleagues. Based on this study, a course designed individually will likely be evaluated individually.

Second, a concern exists that if the door to collaborative evaluation is opened and the results are known, the results could be used punitively. Several instructors stated that they could not see why anyone else would participate in the evaluation, but further prodding during the interview led them to acknowledge that they wondered why anyone else, administrators in particular, would even be interested. Further, if they were interested, what would drive their interest? If any possibility existed that the data from

the evaluation could be used in a negative way, then the instructor did not believe the administrator should participate. This perception speaks to a larger cultural issue at the university, but it must also be acknowledged as a potential barrier to a collaborative approach to evaluating one's online-course design.

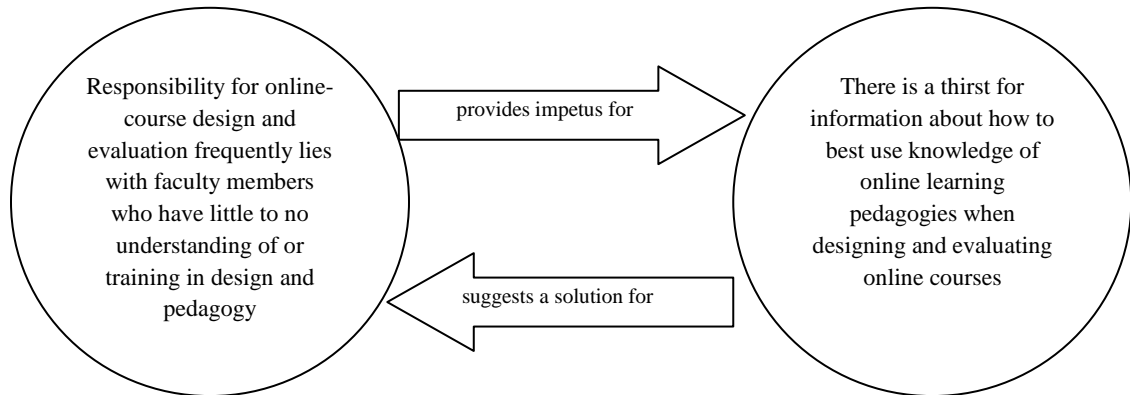
A point of note: While the instructors did not approach the evaluation in this study collaboratively, they each expressed to the researcher how much they had learned from the conversations with the researcher about online-course design in general and design evaluation specifically. This phenomenon suggests that while some instructors may resist a collaborative approach to evaluating their course, they also sense that they have something to gain from collaboration—a paradox worth further exploration.

Summary

The conclusions of this study are particularly fascinating when the relationship between the three is explored. Conclusion One—that a thirst for knowledge exists about the pedagogical aspects of online-course design and evaluation—and Conclusion Two—that the responsibility of online-course design frequently lies with an instructor who has little to no knowledge about the pedagogical aspects of online-course design and evaluation—establish an interdependent relationship: Faculty may not currently have the knowledge they need about online learning pedagogies, but they are also very interested in discovering that knowledge (see figure 2.

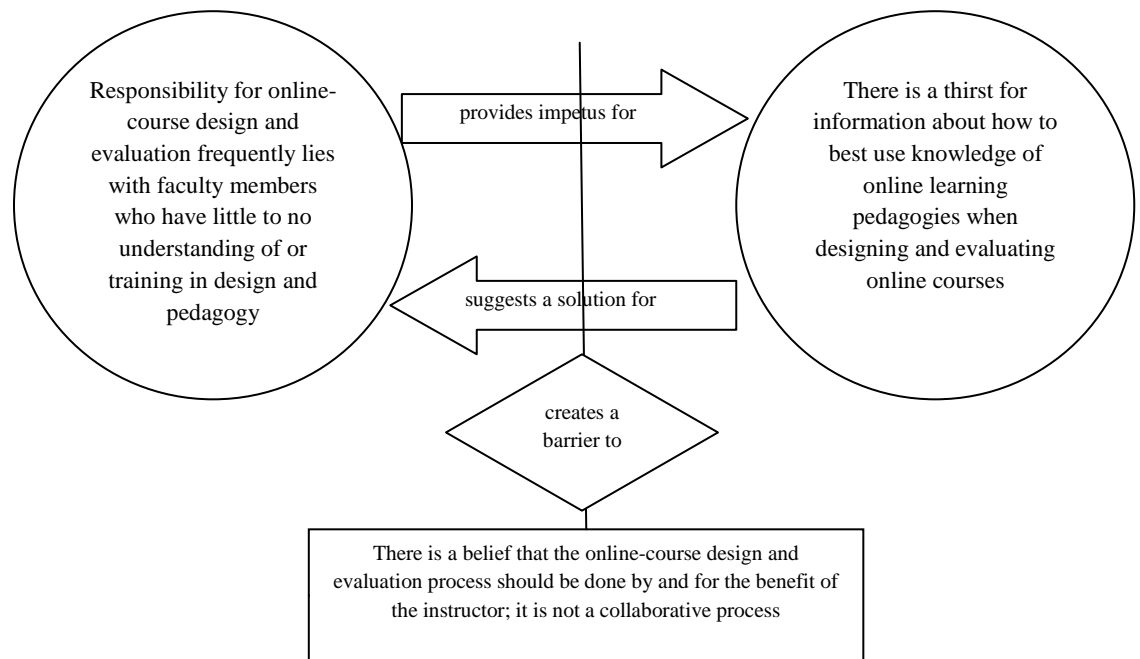
Figure 2: Relationship between conclusions one and two

Figure 2: Relationship between conclusions one and two



However, the third conclusion—that faculty see online-course design and evaluation as a solo effort, not a collaborative one—directly interrupts the relationship between the first two conclusions, essentially creating a barrier for the instructors described in Conclusion Two to gain the knowledge described in Conclusion One (see figure 3). This suggests that until and unless the University creates a stronger culture of collaboration, the quality of online learning may never rise to its highest level of quality.

Figure 3: Relationship between conclusions one, two and three



The recommendations and implications of this study provide some potential solutions for removing the barrier described in Conclusion Three and opening up the door to providing the knowledge described in Conclusion One.

Recommendations and Implications

Four important implications for faculty and university leadership in online learning have emerged from this research study. Following is a discussion of each of these recommendations:

Professional development: It is recommended that online faculty complete both introductory and ongoing professional development in online-course design and evaluation. The evidence from this study suggests that faculty can learn much about online-course design by evaluating the design of their courses. Conversely, they need some basic knowledge in order to conduct the evaluation effectively in the first place.

The knowledge base for online-course design and pedagogy is deep, and it is unlikely that any instructor would master it in a short period of time. Additionally, it is unlikely that online faculty will simply absorb this information along the way, or even become competent at online-course design just by reading a few articles. Harasim (2012) suggested that the future success of online learning will lie in training. “One of the major events of the next few decades will almost certainly be an unprecedented investment in professional development . . . for educators . . . in response to the pent-up demand and need” (Harasim, 2012.) Therefore, a concerted effort at professional development, with both introductory and ongoing professional development for online instructors, is recommended.

Introductory training would ideally occur up to several months before the instructor teaches online and include a high-level discussion of online pedagogy and strategies for first-time course design. This effort alone would significantly increase the knowledge beyond that demonstrated by most of the instructors in this study. After instructors have taught the online course for the first time, follow-up training on the evaluation of their course design, as well as more advanced pedagogy and strategies, would help instructors effectively evaluate their online-course design and make the changes suggested by the evaluation.

Careful consideration should be put into the implementation of such a professional development program, with a number of factors assessed in creating the training. Perhaps most important among these factors is that the training is scaffolded in a way that provides the critical content yet does not overwhelm the instructor. Alternative means of delivery may be utilized, but it is important that a significant portion of the

training take place in the same environment as that in which the instructors will be designing and teaching, so that they have an immediate example of theory put into practice. Finally, the endorsement of such professional development by administrators and peers will help create a culture of expected excellence and quality in online design and instruction.

Universal resources: The university should consider making resources for online-course design and evaluation available universally so that all faculty can benefit from collaborating with an expert in this area. The level of support related to online-course design and access to professional development in this area was extremely varied for the instructors in this study, but leaned heavily toward no little or none. As established by the literature and supported by the findings in this study, online-course design requires a significant investment of time and effort, along with a knowledge of design best practices based on online pedagogies. While professional development can go a long way toward supporting the instructor, the university would be well-served in providing access to instructional design and evaluation support for all faculty teaching online.

This type of support is most effective at two key times. The first is during the initial design of the online learning environment. The knowledge that either an instructional designer or a faculty mentor could bring to the process would be beneficial, primarily by helping to alleviate the load of first-time course design. The person in this type of support role could reinforce information gained from professional development, provide specific and usable strategies for course design, and act as a sounding board for

ideas on course design. Alternatively, this person could also take a more active role in the design process, working closely with the instructor throughout the process.

The second key time when the support would be most effective is during an evaluation of the course design. Again, providing reinforcement and strategies would be an important task, but the support person could also participate in the evaluation process and help the instructor convert findings from the evaluation into real and practical course improvements. As occurred in this study, if an instructor evaluating his course design has questions about the various elements and how to objectively assess those elements in his course, such a resource would be invaluable.

Collaboration: Colleges and/or departments should consider a collaborative approach to online-course design and evaluation in order to ensure adherence to best practices in online-course design and pedagogy. “Participatory practices [in design] challenge educators to alter both what they are doing and how they are doing it” (Sheridan & Roswell, 2010). Participatory design is not the purview of any specific group or individual; it is an iterative and collaborative process, and colleges and/or departments should explore ways to introduce and support participatory, or collaborative, design practices among their faculty. Interaction among peers who face the same challenges, are able to provide insights or knowledge to each other, and have a shared interest in a particular subject matter can inform and improve the design process in a positive way. Changing one’s practice in regard to online-course design is more likely to occur within an environment in which peers and administrators are actively engaged in collaborative approaches to design.

Access to an expert is also an important factor in an instructor's success in designing and evaluating her course. The expert could be an instructional designer, a faculty mentor, or a peer, but should be someone with a strong background in the theory of online-course design and evaluation, as well as experience in implementing the best practices and strategies that emerge from the research. Even a highly experienced and knowledgeable instructor can benefit from this type of interaction. As seen in this study, instructors who do not have their own knowledge cannot effectively evaluate their course independently, nor would they be able to implement and suggested changes. If administrators at all levels of the university do not support a culture of collaboration, faculty are not likely to evaluate their courses, and therefore are not likely to introduce improvements.

It is important that collaboration not be viewed in a negative or threatening way. One of the primary concerns expressed by faculty in this study was concern over how information gained from an evaluation could be used beyond course improvement. Collaboration that is supported by a culture of continuous improvement will go a long way toward making instructors comfortable with involving others in the design and evaluation of their courses. This shift in thinking would help create an environment that allows instructors to try something without fear of reprisal if it does not work. It would also help support the idea that course-design evaluation takes place for the sake of improving the learning environment and benefiting the student rather than for possible punitive use against the instructor. A culture of collaboration that is supported and rewarded at the University would not only overcome these barriers, but would also help create an environment in which collaborative activities are rewarded. This would benefit

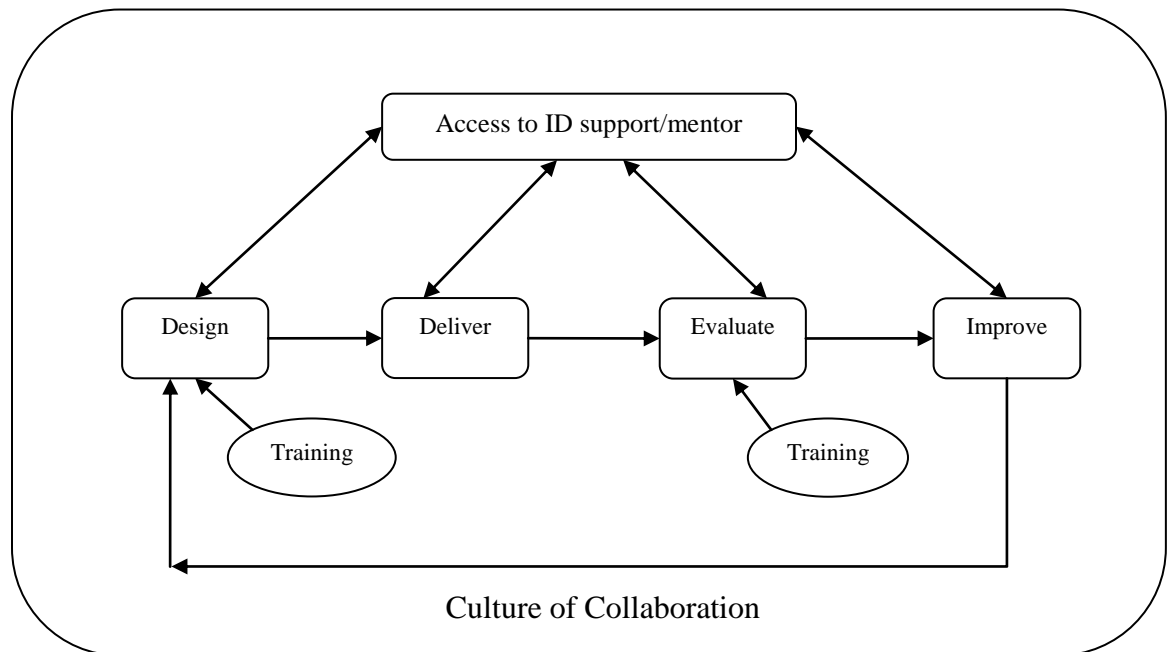
not just the faculty who are designing, teaching, and evaluating online courses, but ultimately provide the highest quality learning experience for online students.

Continuous improvement: Formative design-research methods should be identified and implemented to help faculty who have completed an evaluation of their online course make continuous improvements to the course based on the results of the evaluation. The methodology of design research informed this research and, combined with the conclusions of this study, presents an opportunity to create a model for online-course design and evaluation. Design research is a methodology that “involves putting a first version of a design into the world to see how it works. Then, the design is constantly refined based on experience” (Collins & Bielaczyc, 2004). Design research allows an instructor to introduce improvements to online-course design in a way that is formative, practical, timely, and based on real data rather than intuition or guessing.

The Model for Collaborative Online-course Design and Evaluation (Figure 4) demonstrates how design research can be implemented. As evidenced in this study, faculty have an interest in improving the design of their online courses; this model creates a process through which faculty can effectively identify the needed improvements through evaluation and implement those changes in their courses. At the same time, the model indicates the need for both collaboration with experts and ongoing professional development. The process is iterative; as each cycle occurs, the level of knowledge and experience the instructor has will grow, enabling even more sophisticated updates to the design and eventually producing a course that meets high quality standards of online-course design. Adoption of this model would also contribute to a change in culture from

one of concern about how evaluation data would be used to one of continuous learning about how to improve course design.

Figure 4: Design research model for collaborative online course design and evaluation



Significance

This study explored the experience of evaluating online-course design and how this process could impact processes related to online-course design and evaluation. First, it established that value resides in evaluating online-course design, simply in the learning experience it provided for the instructors. However, it also uncovered a potential paradox in the practices of online-course design and evaluation: While the participating faculty acknowledged that they had learned much about course design and the pedagogy of

online courses from the evaluation process, it is unlikely that they could undertake the evaluation themselves without either previous knowledge of online design and pedagogy or collaboration with colleagues who have that knowledge. Providing non-threatening resources such as an unbiased expert in online design and pedagogy is an important step for universities to consider in order to ensure continuous improvement of their online courses.

Next, the study provided insight into the specific needs of instructors who are designing and teaching online. Instructors who teach online cannot effectively design online courses without support and training. The online learning environment is not the same as the classroom environment, and it calls for different pedagogical and design constructs. Although the participants in this study were eager and dedicated instructors, they exhibited a lack of knowledge in these areas, and that lack of knowledge translated into less effective design decisions for their online courses. Universities must therefore consider ways to provide this support to online faculty in order to ensure that online students are exposed to a high-quality online learning environment.

Limitations

This study of five online courses was the first phase of a design-research plan and was limited to one university. Because this research is a case study and the sample was purposively selected, findings may not be generalizable to all online courses or to all disciplines. Universities without large online programs or the use of learning management systems may not obtain similar findings in a like study.

Due to the lack of participation by additional personnel like instructional designers, other faculty, or program administrators, it may be difficult to replicate a study on the shared experience of an online course design evaluation.

Recommendations for Future Research

This research was the initial stage of a design-research study. Because design research is focused on practical application and continuous improvement, a natural next step in this research would be exploring whether, to what degree, and/or how faculty implement the improvements in course design suggested by the evaluation. The faculty in this study identified course improvements as a motivating factor for participating in the evaluation, while readily acknowledging that they did not possess either the background or the knowledge to make those changes; therefore, it appears that a need exists to continue this research in order to determine how to help faculty move forward in online-course design and what processes and or training would support them as they do so.

Because collaboration with others presented both a barrier and a potential solution to faculty members' building knowledge and experience in online-course design and evaluation, research into the nature of such collaboration provides a rich topic for future study. Understanding what collaborative design is and how it can effectively contribute to a dynamic and engaging student-learning environment could be a crucial step in helping to overcome the natural resistance to collaboration seen in this study. More importantly, investigating how the cultural influences of a University can impact the level of collaborative design and evaluation that faculty undertake would help illuminate the factors impacting the successful implementation of such activities. Understanding these factors will be critical for Universities that want to move forward in creating a culture of

collaboration. Closely related to this would be further study in which participation by instructional designers, other faculty and/or program administrators do participate in order to understand what value their input adds to the overall process.

Finally, an evaluation of online-course design could be further informed by the collection of student data, both quantitative (grades and other performance indicators) and qualitative (impressions of the learning environment). While this study focused on the faculty role in the design and evaluation of online courses, the perceptions and performance of the students taking the online courses would add a deeper level of understanding about the impact and use of best practices in online-course design and pedagogies. It would also help create a stronger link to the design decisions made by faculty teaching online.

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Appendix A: Participant Request Letter

Dear (Title) (Name),

I am contacting you for assistance in a research study being conducted by doctoral candidate Judith Giering. The topic of the dissertation is the evaluation of online course design, and we are currently seeking faculty members who may be willing to work with us in this dissertation study. Briefly, the study will conduct an evaluation of online course design in collaboration with the faculty member and, if appropriate, the instructional designer who worked on the course. Input will also be obtained from the Program Director or Department Chair.

We are asking for your help in identifying a faculty member who may be interested in working with Judith. The benefit of participating in this study is the opportunity for the faculty member to have an in-depth evaluation of the design of their online course. (Note that this evaluation is not concerned with course content or curriculum issues; it is strictly focused on design.) Perhaps more importantly, the faculty member may discover some practices which he/she finds valuable and can implement for other online courses.

Requirements for participating in the study are as follows:

- Provide a course description and the course learning objectives to the researcher
- Provide access to the online course to the researcher
- Participate in an evaluation of the course by completing a survey and answering reflective questions
- Meet with the researcher for approximately one hour before the start of the course
- Meet with the researcher for approximately one hour after the course has concluded

Please note that all participants will remain anonymous in the study. Additionally, we will refer to courses by general subject area only, to help minimize the chance that the course/instructor could be identified. If you know of a faculty member who may be interested in participating or learning more about the study, please either forward their contact information to me or provide the instructor with my contact information.

Judith Giering
jgm22@drexel.edu
267-257-4883

Thank you in advance for your assistance.

Sincerely,
Elizabeth Haslam, Ph.D
Principal Investigator

Judith Giering
Co-Investigator

Appendix B: Quality Online Learning Checklist

Rate the following course design elements on a scale of 1 to 5.

1 = does not meet

2 = rarely meets

3 = sometimes meets

4 = mostly meets

5 = always meets

	1	2	3	4	5
Pedagogies <ul style="list-style-type: none"> • Authentic tasks – the learning activities involve tasks and contexts that reflect the way in which the knowledge will be used in real life • Opportunities for collaboration – the environment encourages and requires students to collaborate to create products that could not be produced individually • Learner-centered environments – there is a focus on activities that provide degrees of freedom, decision-making, reflection, and self-regulation • Engaging – the learning activities challenge learners and provide some form of encouragement and motivation to support the engagement • Meaningful assessments – authentic and integrated assessment is used to evaluate students' achievement 					
Resources <ul style="list-style-type: none"> • Accessibility – the resources are organized in ways that make them easily accessed and located • Currency – the age of resources are appropriate to the subject matter • Richness – the resources reflect a rich variety of perspectives • Strong use of media – the materials use the various media in appropriate ways • Inclusivity – the materials demonstrate cultural and gender inclusivity 					
Delivery Strategies <ul style="list-style-type: none"> • Reliable and robust interface – the materials are accurate and error-free in their operation across all platforms and browsers • Clear goals, directions, and learning plans – unit information and expectation of student roles are clear • Appropriate bandwidth demands – the materials download without delays • Equity and accessibility – the unit materials and activities are considerate of students with visual impairments and physical disabilities • Appropriate corporate style – the materials use a style that is compatible with university policy and guidelines 					

Appendix C: Matrix aligning course elements with learning objectives

Enter your course learning objectives below. Then enter each of the components from your online course, including content presentations, audio/video, articles, links, assessments, etc. Indicate which, if any, each of the course learning objectives are associated with each element.

- 1.
- 2.
- 3.
- 4.
- 5.

Course Content Elements	Course Assessment Elements	Associated Learning Objective(s)

Appendix D: Faculty Survey

1. Have you developed online courses in the past? _____
 - a. If so, how many? _____
2. Does your College provide support (i.e. instructional designers, media developers, etc.) in the design of your online courses? _____
 - a. If so, describe. _____

3. Did you use a particular learning approach (i.e. constructivism, project-based learning) to guide your course design? _____
 - a. If so, describe. _____

4. Did you use a specific instructional design model to guide the design of your online course? _____
 - a. If so, describe. _____

5. Did you follow a template to design your course? _____
 - a. If so, did you develop it or was it provided to you by someone else? _____

6. Did the topic of your course impact your design decisions? _____

7. Were others involved in the design of this course, i.e. an instructional designer or multi-media developer? _____
 - a. If so, describe the relationship between each of the individuals and the roles they played in development. _____

8. Have you received any formal training in instructional design or design of online courses? _____
 - a. If so, describe. _____

Appendix E: Interview Guide

Date:

Name of Participants:

Name of Online Course:

Introductory Questions

- What are your overall impressions of this experience?
- How long have you been teaching online?
- What is your perception of online learning?
- Tell me about the course used in this study – how long have you been teaching it, any specific challenges about the course, the students, etc.

Research Question 1 - Which components and activities of the course design evaluation are deemed valuable by program administrators, faculty, and course designers and why?

- Have you previously conducted an evaluation of the design of your online course?
- What are the three most critical things that you take away from the evaluation of your online course design?
- Do you think that different stakeholders would feel differently about the evaluation process?

Research Question 2 - What factors support or challenge the evaluation process of online course design?

- Do you feel that this evaluation could be replicated in your College?
- What do you perceive as the reasons to support such an evaluation?
- What do you perceive as the barriers to conducting this type of evaluation?
- What could be better about the evaluation process?

Research Question 3 - What is the perception of program administrators, faculty, and course designers of the shared experience of evaluating the design of an online course?

- Do you feel that evaluating your online course design is beneficial?
- Do you think that participating in this evaluation will change your design practices going forward?
- In what way does completing this evaluation in a collaborative manner affect the efficacy of the evaluation?

Appendix F: C.V. for Stephanie S. Sutcliffe, Ph.D.***Address***

Goodwin College of Professional Studies
One Drexel Plaza
3001 Market Street, Suite 110
ssg24@drexel.edu
Philadelphia, PA 19104

Tel: 215.571.3877
Fax: 215.895.0962
Email:

Current Employer

Assistant Director of Instructional Design, Goodwin College of Professional Studies,
Drexel University, Philadelphia, PA 19104.

Education

Ph.D. in Educational Leadership Development and Learning Technologies – School of
Education, Drexel University, Philadelphia, PA, 2004.

M.S. in Instructional Technology and Interactive Video – Bloomsburg University,
Bloomsburg, PA, 1994.

B.S. in Communications Media (Training and Development) – Indiana University of
Pennsylvania, Indiana, PA, 1992.

Past Employment

Adjunct Professor, School of Education, Drexel University, Philadelphia, PA, September
1999 – present.

Senior Instructional Designer, Drexel eLearning, Inc., Philadelphia, PA, March 2009 –
September 2011.

Online Curriculum Author, DeVry University, Fort Washington, PA, November 2005 –
May 2007.

Adjunct Professor, DeVry University, Fort Washington, PA, October 2004 – May 2007.

Senior Project Manager/Consultant, Strategic Management Group, Inc., Philadelphia, PA,
June 1994 – May 2002.

VITA

EDUCATION

- Ph.D, Educational Leadership and Learning Technologies, Drexel University, 2012
- M.S., Information Systems, Drexel University, 2000
- B.A., History, St. Joseph's University, 1990

PROFESSIONAL EXPERIENCE

- Associate Director, Instructional Design, Drexel University, 2010 – present
- Instructional Designer, Drexel University, 2007 – 2010

TEACHING EXPERIENCE

- E-learning Leadership Program, Drexel University, 2011 - present
- Learning Technology Program, Drexel University, 2008 – present
- Creativity & Professional Studies Program, Drexel University, 2008 - 2010

PRESENTATIONS

- Drexel e-Learning 2.0 Conference 2012
 - From Technology to Pedagogy: Reconceptualizing Online Instructor Training
- PA State System of Higher Education Conference 2012
 - Beyond Compliance: Strategies to Increase Online Accessibility and Engagement for Students with Disabilities
- Sloan Consortium International Conference 2011
 - A Three-tiered Approach to Online Faculty Development: Training When and Where it is Needed Most
- Educause Annual Conference 2011
 - Student Perspective Panel: Best Practices to Increase Online Success for Students with Disabilities

AWARDS

- Outstanding Online Instructor, Goodwin College, 2010
- Nomination, President's Award, 2008